A. Notes:

1. Mills and Fisher* numbers = adult escapement for 1967 - 1991 baseline period were used to calculate AFRP doubling goals (Mills and Fisher 1994). Adult escapement numbers were based on three general methods:
  a. Direct counts RBDD and at hatcheries.
  b. Snorkel surveys.
  c. Mark-recapture methodology.
  d. Indexing of spawning areas.
  e. Aerial redd counting.

2. Grand Tab** numbers = adult escapement for 1952 - 1966 and 1992 - 2003 periods. Grand Tab numbers are updated at least yearly and are based on one of the following methods:
  a. Creel survey's.
  b. Carcass survey's.
  c. Redd survey's.
  d. Direct counts (RBDD and at hatcheries).

3. Doubling goal numbers are calculated by doubling the arithmetic mean of the baseline period (1967 - 1991) for each tributary.

4. Doubling goals are rounded off from doubling the arithmetic mean of the 1967-1991 Mills and Fisher numbers.

B. Caveats that apply to all figures except as noted.
  1. Data from either Mills and Fisher (baseline period only) or Grand Tab is expanded using the methods described in the Final Restoration Plan for the Anadromous Fish Restoration Program, January 9, 2001, Appendix A11-A15.
  2. Numbers for the baseline 1967-1991 are from Mills and Fisher (1994), and have not been updated using Grand Tab.
  3. Grand Tab numbers are updated at least yearly (salmon only).
  4. Sampling methods may have differed between tributaries.
  5. Sampling methods may have differed from year to year on each tributary.
  6. Mills and Fisher (1994) listed methods of sampling as (salmon only):
    a. Direct counts RBDD and at hatcheries).
    b. Snorkel surveys.
    c. Mark-recapture methodology.
    d. Indexing of spawning areas.
    e. Aerial redd counting.
  7. Natural production estimates are calculated in part using (salmon only):
    a. A hatchery proportion that is based on the opinion of fishery biologists.
    b. Instream harvest proportions are based on the opinion of fishery biologists.
    c. Natural (in-river) and hatchery escapement numbers.
    d. Natural escapement may include unmarked hatchery fish that are not accounted for.
    e. Hatchery escapement numbers may be low since the hatchery ladder gate may be closed before all hatchery fish have returned.
  8. Doubling goal numbers were rounded off in the Final Restoration Plan, and may be higher or lower than double the 1967 - 1991 average (arithmetic mean).

C. The following notes and/or caveats apply to each figure.

Figure 1.
  1. Combines the Sacramento and San Joaquin basins.

Figure 2.

1. Combines the Sacramento and San Joaquin basins.
2. 2001 and 2002 adult escapement exceeds natural production estimates, possibly due to the high Battle Creek fall-run numbers.

Figure 3.
    1. Combines the Sacramento and San Joaquin basins.

Figure 4.
    1. Combines the Sacramento and San Joaquin basins.

Figure 5.
    1. Combines the Sacramento and San Joaquin basins.

Figure 6.
    1. Unknown reason for the low numbers 1998 and 2001.
    2. Instream harvest % = 0.1, 1967 - 2001.
    3. Hatchery % = 0.4, 1967 - 2001.
    4. Hatchery escapement = 0, 1967 - 2001.

Figure 7.
    1. No Grand Tab number for 1997.
    2. Hatchery escapement = 0, 1967 - 2001.
    3. Instream harvest = 0.2, 1967 - 2001.
    4. Hatchery % = 0.082, 1967 - 2001.
    5. Doubling goal in Final Restoration Plan should be 69,022 to match double the arithmetic mean of the baseline period.

Figure 8.
    1. Doubling period numbers, 1992 - 2001, are very low.
    2. Instream harvest = 0.2, 1967 - 2001.
    3. Hatchery % = 0, 1967 - 2001.

Figure 9.
    1. Instream harvest = 0.2, 1967 - 2001.
    2. Hatchery % = 0, 1967 - 2001, although there are hatchery production winter run.

Figure 10.
    1. No data for 1970 - 75, 79, 80, 83.
    2. Instream harvest = 0.1, 1967 - 2001.
    3. Hatchery % = 0.2, but there is no hatchery on the tributary, 1967 - 2001.

Figure 11.
    1. No data for 1970 - 75, 79, 80, 93 - 01.
    2. Instream harvest = 0.1, 1967 - 2001.
    3. Hatchery % = 0.2, 1967 - 2001.

Figure 12.
    1. No data, 1970 - 75, 77 - 83, 92 - 01.
    2. Instream harvest = 0.1, 1967 - 2001.
    3. Hatchery % = 0.2, 1967 - 2001.
    4. No data for the 1992 - 2001 period.

Figure 13.
1. Adult escapement is greater than natural production estimates for most years.
2. Instream harvest = 0.1, 1967 - 2001.
3. Hatchery % = 0.9, 1967 - 2001.
4. Natural escapement and production exceed the doubling goal without restoration.
5. Hatchery on the tributary could cause overestimation of natural production.

Figure 14.
1. Mills and Fisher do not list natural escapement.
2. Natural production numbers for the baseline period were calculated using hatchery returns only.
3. Instream harvest = 0.2, 1967 - 2001.
4. Hatchery % = 0.9, 1967 - 2001.
5. No data for 1952 - 69, 01, 02 in Mills and Fisher and Grand Tab.
6. Natural escapement exceeds the doubling goal without restoration.
7. Hatchery on the tributary can result in overestimation of natural production.

Figure 15.
1. No data for 1967 - 68, 70 - 81, 90 - 01.
2. Instream harvest = 0.1, 1967 - 2001.
3. Harvest % = 0.2, 1967 - 2001.

Figure 16.
1. No data for 1952, 59, 61,78 - 80, 90-01.
2. Instream harvest = 0.1, 1967 - 2001.
3. Hatchery % = 0.2, 1967 - 2001.
4. No data for the 1992 - 2001 period

Figure 17.
1. No data for 1955, 61,90 - 92, 95 - 96, 99 - 01.
2. Instream harvest = 0.1, 1967 - 2001.
3. Hatchery % = 0.2, 1967 - 2001.
4. There is only data for only 4 of the 10 year doubling period for fall-run.

Figure 18.
1. No data for 1952 – 62, 67 – 69, 79, 84.
2. Instream harvest = 0.1, 1967 - 2001.
3. Hatchery % = 0, 1967 - 2001.

Figure 19.
1. No data for 1990, 95 - 96, 99 - 01.
2. Instream harvest = 0.1, 1967 - 2001.
3. Hatchery % = 0.2, 1967 - 2001.
4. Data available for only 6 of the 10 year doubling period for fall-run Chinook salmon.
5. Complete data for spring run during the 10 year doubling period.

Figure 20.
1. Missing years of data differs from Figure 19.
2. No data for 1952 - 59, 65 - 69, 76, 83.
3. Instream harvest = 0.1, 1967 - 2001.
4. Hatchery % = 0, 1967 - 2001.

Figure 21.

1. No data for 1952, 61 – 63, 78 - 79, 90 - 03.
2. No Grand Tab data after 1976.
3. Instream harvest = 0.1, 1967 - 2001.
4. Hatchery % = 0.2, 1967 - 2001.

Figure 22.
1. No restoration goal.
2. No data for 1960 - 68, 70, 78 - 79, 85 - 03.
3. Instream harvest = 0.1, 1967 - 2001.
4. Hatchery % = 0.2, 1967 - 2001.

Figure 23.
1. No data for 1952 – 61, 67 - 70, 73, 77, 79 - 82, 84 - 87, 90 - 94, 01.
2. Instream harvest = 0.1, 1967 - 2001.
3. Hatchery % = 0.2, 1967 - 2001.

Figure 24.
1. Instream harvest = 0.1, 1967 - 2001.
2. Hatchery % = 0, 1967 - 2001.
3. The 1992 - 01 period exceeds the doubling goal except for 1992 - 95, 97.

Figure 25.
1. Data available only for 1957, 83 - 85.
2. Instream harvest = 0.1, 1967 - 2001.
3. Hatchery % = 0.2, 1967 - 2001.
4. Doubling goal in the Final Restoration Plan should be 480 to match the arithmetic mean of the baseline period.

Figure 26.
1. No data for 1952 – 61, 70, 72, 75 - 76, 78 – 83, 86 – 92, 02.
2. No stated AFRP Restoration goal.

Figure 27.
1. No Grand Tab data for 1990, 98.
2. Instream harvest = 0.2, 1967 - 2001.
3. Hatchery % = 0.4, except for 1992 - 94 = 0.

Figure 28.
1. Exceeds the doubling goal for 1982, 96, 97.
2. No Grand Tab number for 1990.
3. Instream harvest = 0.1, 1967 - 2001.
4. Hatchery % = 0, 1967 - 2001.

Figure 29.
1. Data available for 1984 only.
2. Exceeds the doubling goal for 1984.
3. Instream harvest = 0.1, 1967 - 2001.
4. Hatchery % = 0, 1967 - 2001.
5. Doubling goal is not double the arithmetic mean of the baseline period.

Figure 30.
1. Exceed the doubling goal 1995, 00, 01, 03.

      2. Instream harvest = 0.45, 1967 - 2001.
      3. Hatchery % = 0.4, 1967 - 2001.
      4. Hatchery on the tributary.

Figure 31.
      1. Instream harvest = 0.1, 1967 - 2001.
      2. Hatchery % 0.4, 1967 - 2001.
      3. Hatchery on the tributary could result in overestimation of natural production.
      4. Exceeds the doubling goal 95 - 97, 02, 03.
      5. Periods with lower production numbers indicate drier years.

Figure 32.
      1. No data for 1952, 59, 61, 76, 77, 82, 86, 89 – 97, 99 - 03.
      2. Instream harvest = 0.1, 1967 - 2001.
      3. Hatchery % = 0, 1967 - 2001.
      4. Exceeds the doubling goal 1969, 72.
      5. No data for the 1992 - 2001 period.

Figure 33.
      1. No Grand Tab data available.
      2. Instream harvest = 0.2, 1967 - 2001.
      3. Hatchery % = 0, 1967 - 2001.
      4. There is a question as to whether these fish are late-fall run or winter run .
      5. No data for the 1992 - 2001 period.

Figure 34.
      1. No data available for 1982.
      2. Instream harvest = 0.05, 1967 - 2001.
      3. Hatchery % = 0, 1967 - 2001.
      4. Periods with lower production numbers indicate drier years.

Figure 35.
      1. Instream harvest = 0.05, 1967 - 2001.
      2. Hatchery % = 0, 1967 - 2001.
      3. Exceeds the doubling goal for 1969 - 71, 85, 87.

Figure 36.
      1. Instream harvest = 0.05, 1967 - 2001.
      2. Hatchery % = 0 (1967 - 72, 92 - 97) and = 0.1 (1973 - 91, 98 - 01)
      3. Hatchery on the tributary could result in overestimation of natural production.
      4. Periods with lower production numbers indicate drier years.

Figure 37.
      1. No escapement estimates in the San Joaquin mainstem.
      2. Escapement in the San Joaquin River is calculated using the sum of the Stanislaus, Tuolumne and
Merced rivers.

* = Mills and Fisher. 1994. Central Valley Anadromous Sport Fish Annual Run-size, Harvest, and Population
      Estimates, 1967 through 1991. June 1993, revised August 1994.

** = Grand Tab. California Department of Fish and Game, Native Anadromous Fish and Watershed Branch.
February 5, 2004.

D. Chinookprod audit - January 5, 2006

The following are the results of an audit of Chinookprod, after it was found that production estimates for the baseline period changed from the Working Paper numbers. This audit does not include the setting of the rounding function to a fixed number of places out.

BN = Book of Numbers; <u>Central Valley Anadromous Sport Fish Annual Run-size, Harvest, and Population Estimates, 1967 through 1991</u>.
CP = Chinookprod
GT = Grand Tab
KP = Kingprod
SS = <u>King (Chinook) Salmon Spawning Stocks in California's Central Valley</u>
WP = Working Paper

1. Error found in Kingprod and the Working Paper - Central Valley late-fall, column E; starting in 1968, cell addresses to @sum(Sacramento River through Merced River) do not match. This has already been corrected in CP.
2. Spring run are not listed in KP and WP for Big Chico Creek; these fish were added to CP, so 1967-1969, 1973, 1974, and 1977 numbers are higher in CP.
3. Misc below RBDD (miscellaneous creeks below the Red Bluff Diversion Dam) was not in KP and WP but was added in CP.
4. CP - moved Central Valley late-fall up one row for proper alignment.
5. CP - Feather River, column C numbers were off by one row - shifter the numbers down one row.
6. CP - Central Valley fall-run - column B numbers do not match KP or WP for those dates where there data in Misc below RBDD. Misc below RBDD worksheet was added to include those streams not specifically named, between the RBDD and Princeton. Years where numbers differ because of the addition of Misc below RBDD are: 1969, 1971 through 1977, and 1980 through 1984.
7. CP - Central Valley all races - cell I:44 corrected from 115,100 to 114,455.
8. WP - Central Valley fall-run, column E(f,n,cv), 1972 = 139,192, should be 138,812. This is correct in KP and CP.
9. WP - Central Valley fall-run, column E(f,n,cv), 1975 = 178,801, but should be 178,301 (KP).
10. WP - Central Valley fall-run, column E(f,n,cv), 1976 = 182,092, but should be 182,592 (KP).
11. WP and KP - Central Valley fall-run, column E(f,n,cv), 1978 = both have 1978 Cosumnes River data entered in the 1979 row. Verified the error in BN. Corrected KP.
12. WP - all Central Valley fall-run numbers 1978 through 1991 are off by -50, but can't find the error.
13. WP - Central Valley fall-run, 1980 is off by -201.
14. WP and KP - Bear River - 1978, 1980, 1982, 1983, and 1986 data was entered for these years, but escapement information from DFG can't be found for these years. DFG surveys only list 1962 = no estimate, and 1984 = 300 which is in CP.
15. WP and KP - Feather River, 1984 = 42,671. BN and CP are both 41,554; corrected KP.
16. CP - Sacramento River late-fall-run, 1989. CP = 9,876, but should be 9,875, and corrected CP.
17. CP - Sacramento River winter-run, 1971. CP = 43,089, but should be 53,089, and corrected CP.
18. CP - Calaveras River winter-run, 1972. CP has no entry, BN doesn't list this tributary. <u>King (Chinook) Salmon Spawning Stocks in California's Central Valley, 1972</u>, p. 19 gives an estimate of 500. Therefore added 1972 data to CP. GT has no data for 1972.
19. WP and KP - Calaveras River, 1984 have no data for this year. CP, GT, and SS = 100. Corrected KP.
20. CP - Big Chico Creek spring-run are not in WP or KP so 1967-1969, 1973, 1974, and 1977 numbers are higher in CP.
21. WP and KP - Cosumnes River; row 20 should be row 19; the data entered in row 1979 is the 1978 data. All data was off by one year after 1978.

E. At the conclusion of the audit, the rounding function in Chinookprod.123 was set at 4 places in all cells that were calculated, except for those calculated numbers that were to small. This was done to keep yearly production estimates from varying in the baseline period. It was found that while in-river and hatchery escapement, and ocean harvest numbers for the baseline period did not change, the production estimate did change in a number of cases, caused by the rounding function not being set. In cells where the calculation could not completed with the rounding function set at 4 places, these cells were set and displayed at 5 places. In cells where the rounding had to be set out to 5 places were in column H, Production (total escapement plus instream harvest) divided by Production (Central Valley) or P_{EI}/P_{CV}. This proportion, P_{EI}/P_{CV}, is very sensitive to changes in the number of places the rounding function is set at.

> Example - Battle Creek, 1988 fall-run, with P_{EI}/P_{CV} rounded to 4 places, the production estimate $P = 27,117$, but if the number is rounded to 2 places, $P = 26,683$, a difference of 432. It was found that the larger the production estimate, the larger the error would be.

Once setting the rounding function was completed, a comparison between the Lotus and Excel version revealed discrepancies existed. These discrepancies were attributed to data entry errors in the Excel version. The errors were corrected, and both versions matched.
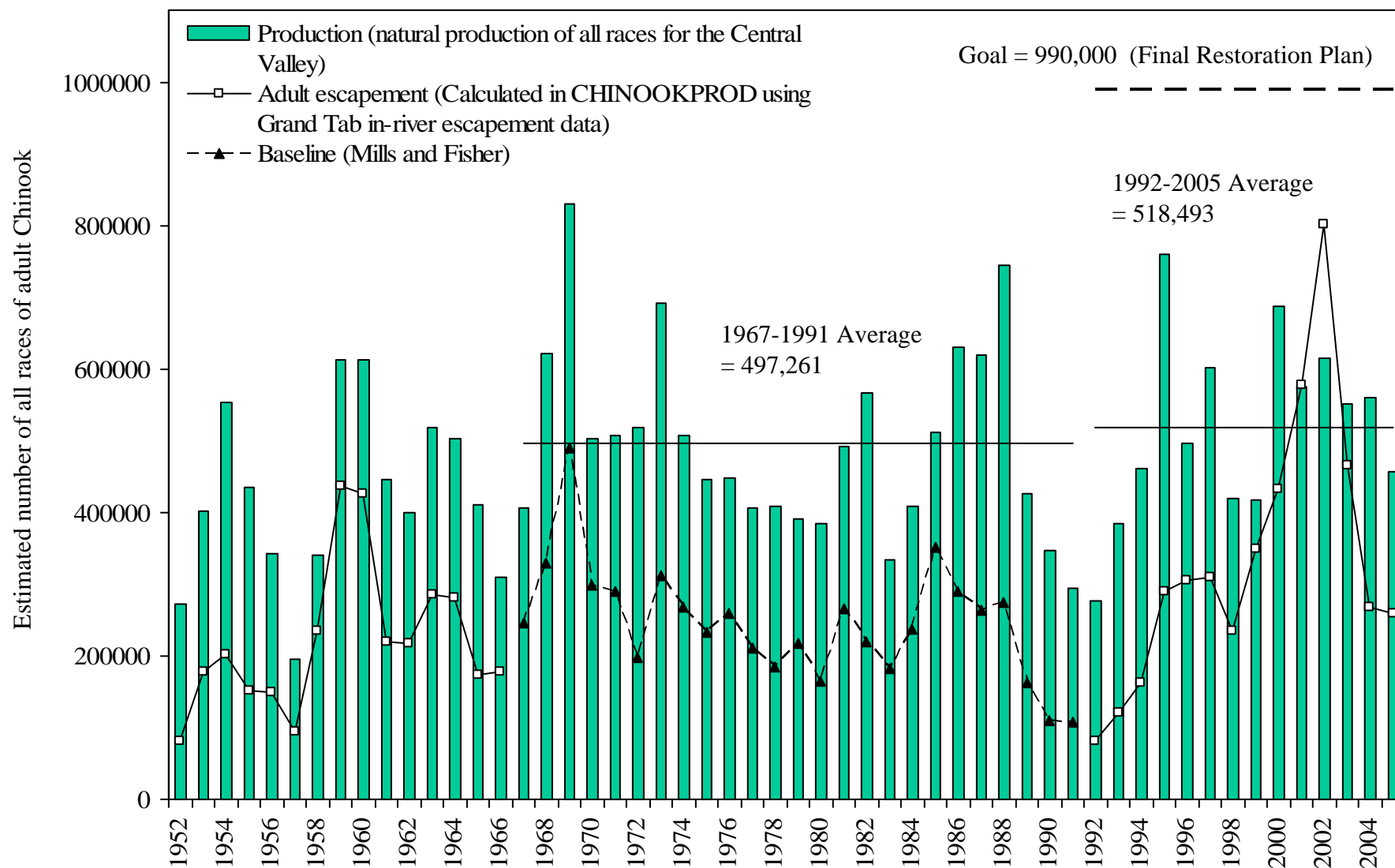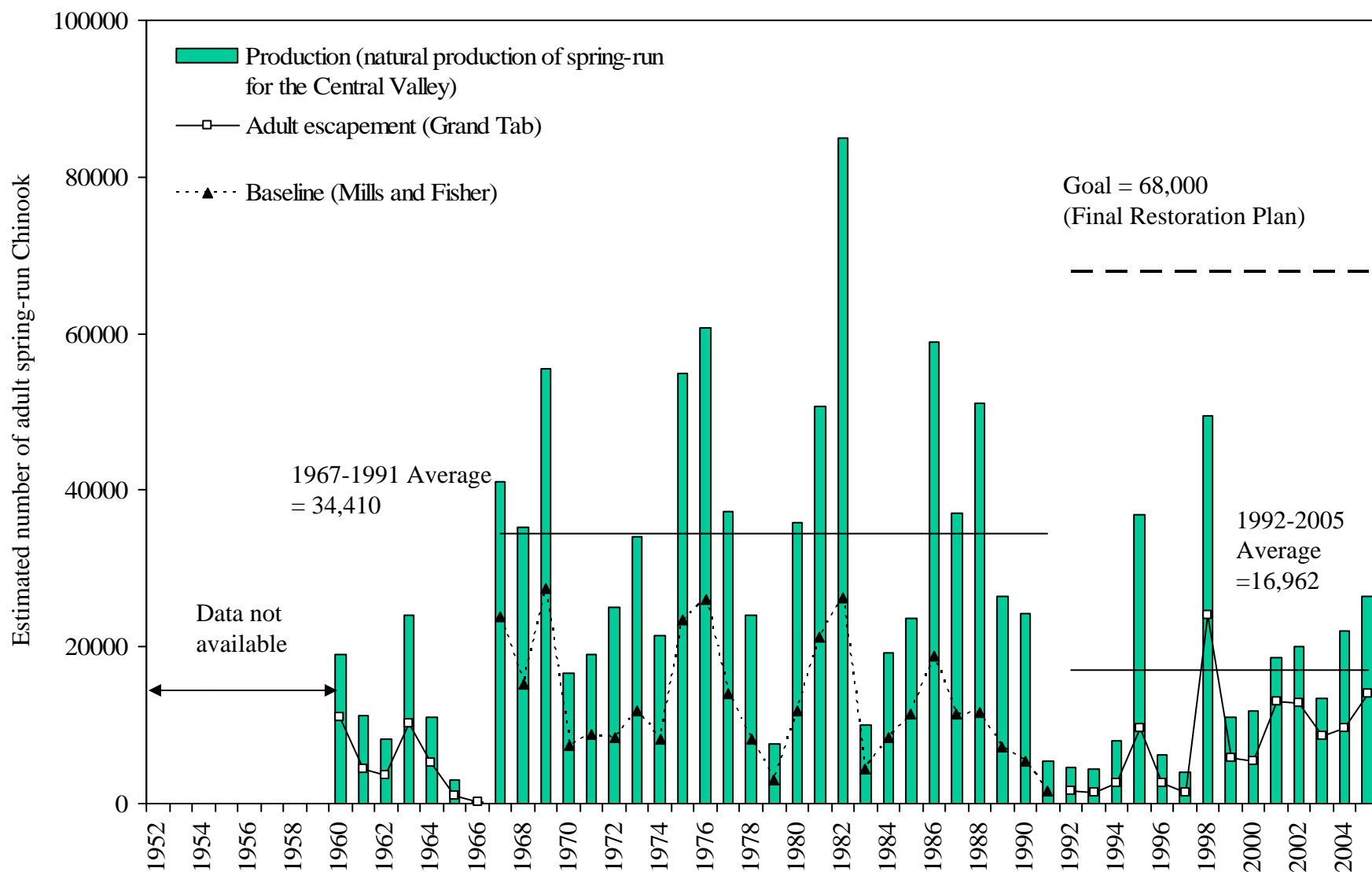
Figure 1. Estimated yearly natural production and in-river escapement of all races of adult Chinook Salmon in the Central Valley rivers and streams. 1952 - 1966 and 1992 - 2005 numbers are calculated in CHINOOKPROD using CDFG Grand Tab in-river escapement data (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).
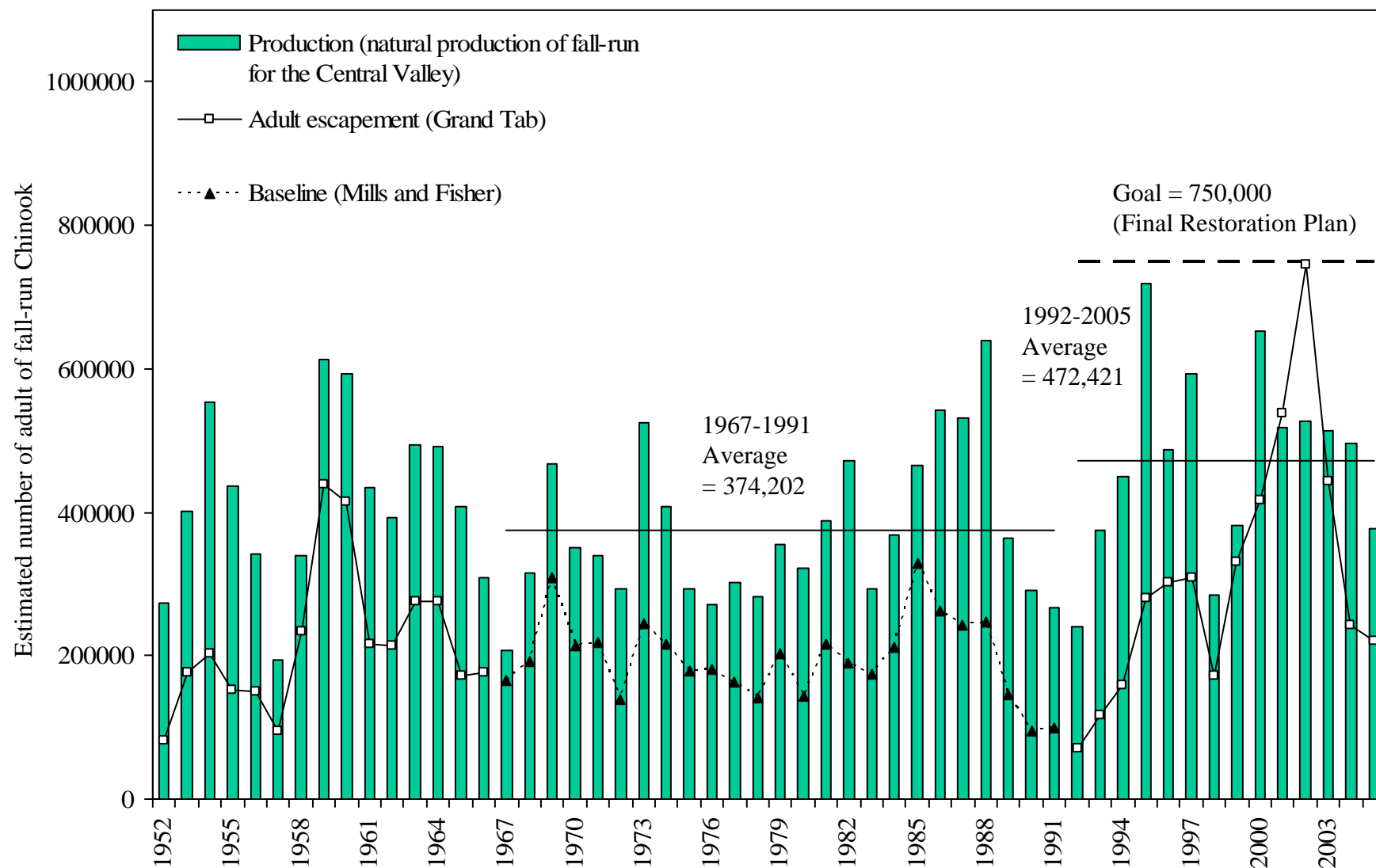
Figure 2. Estimated yearly natural production and in-river escapement of adult fall-run Chinook salmon in the Central Valley rivers and streams. 1952 - 1966 and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).
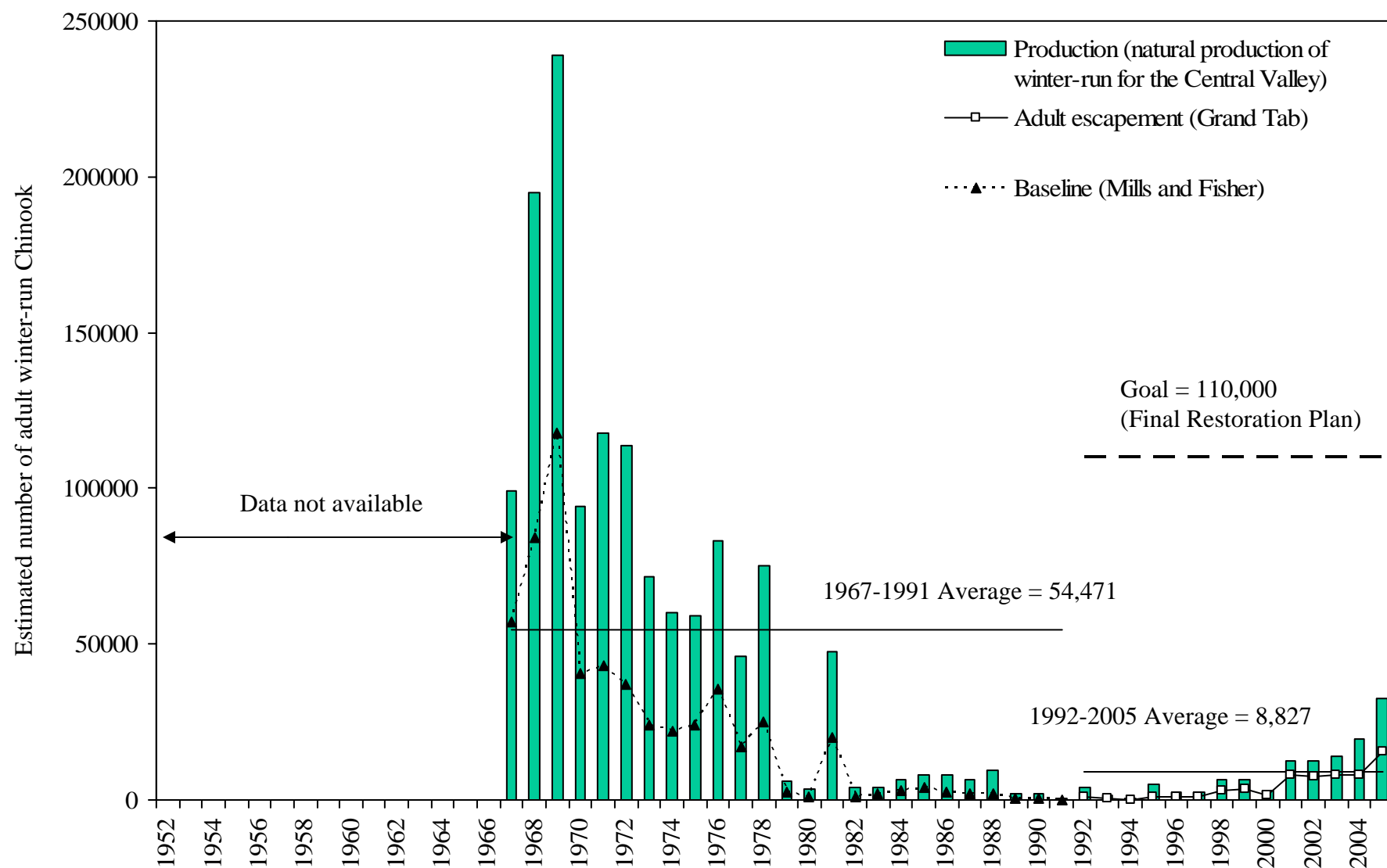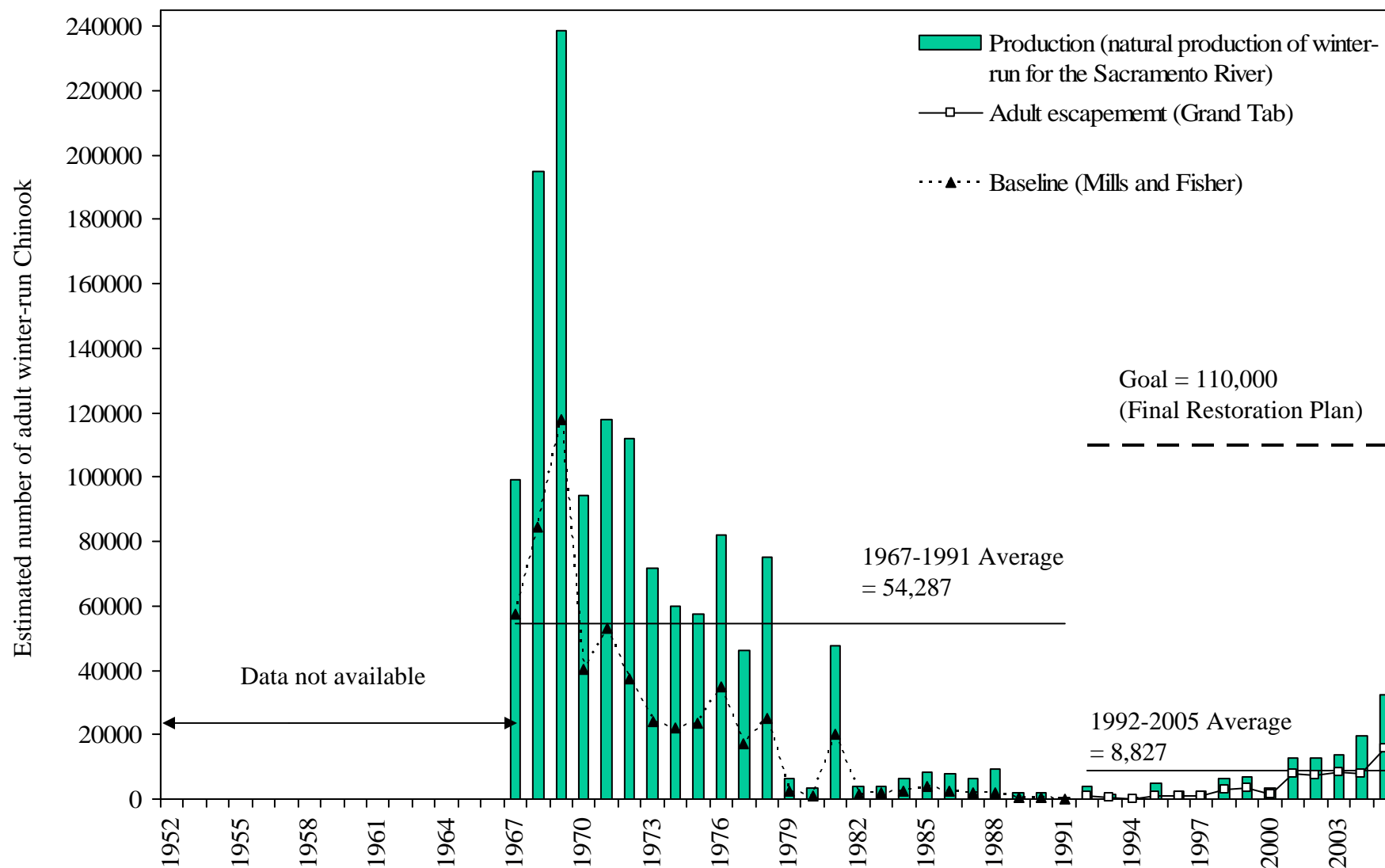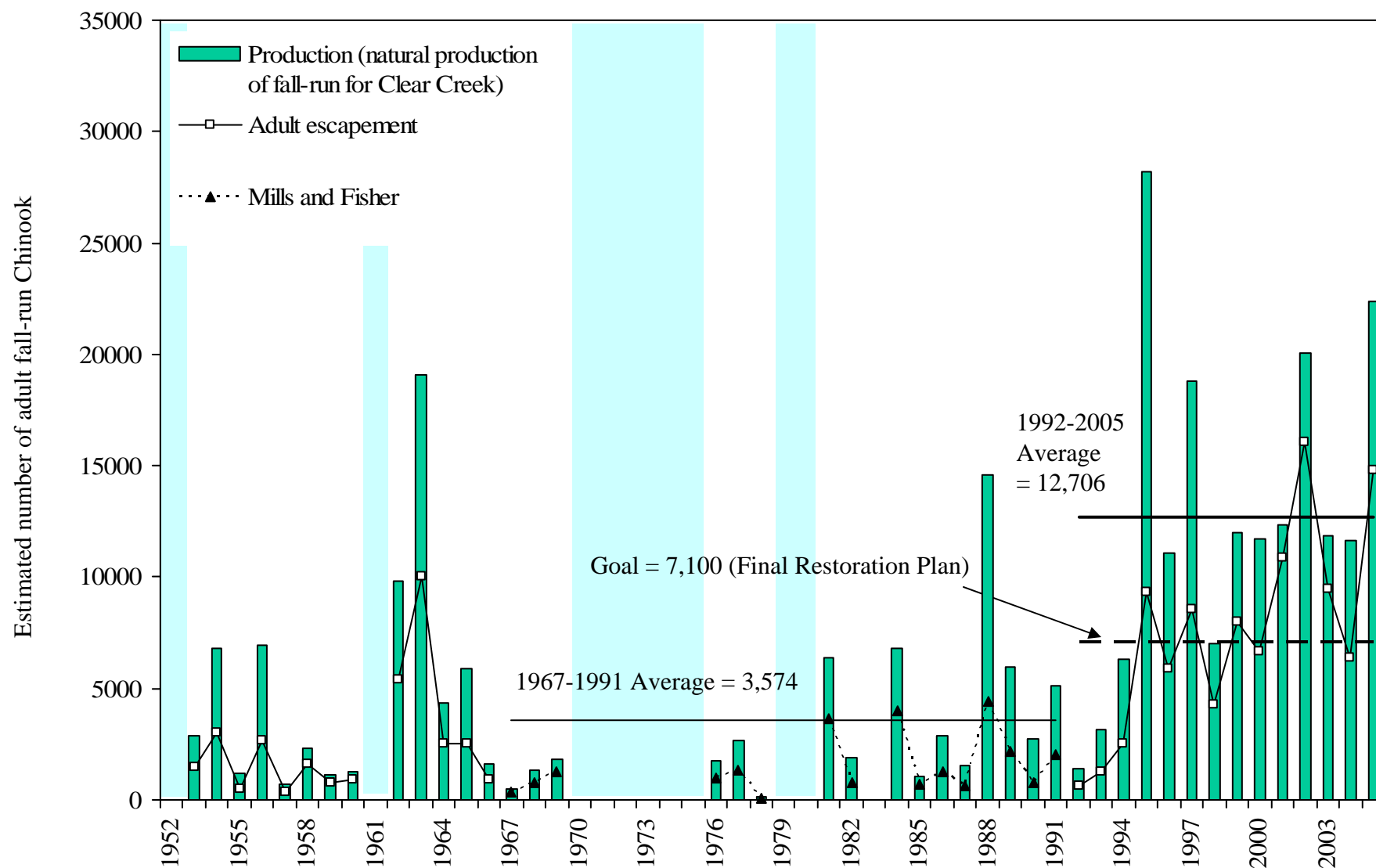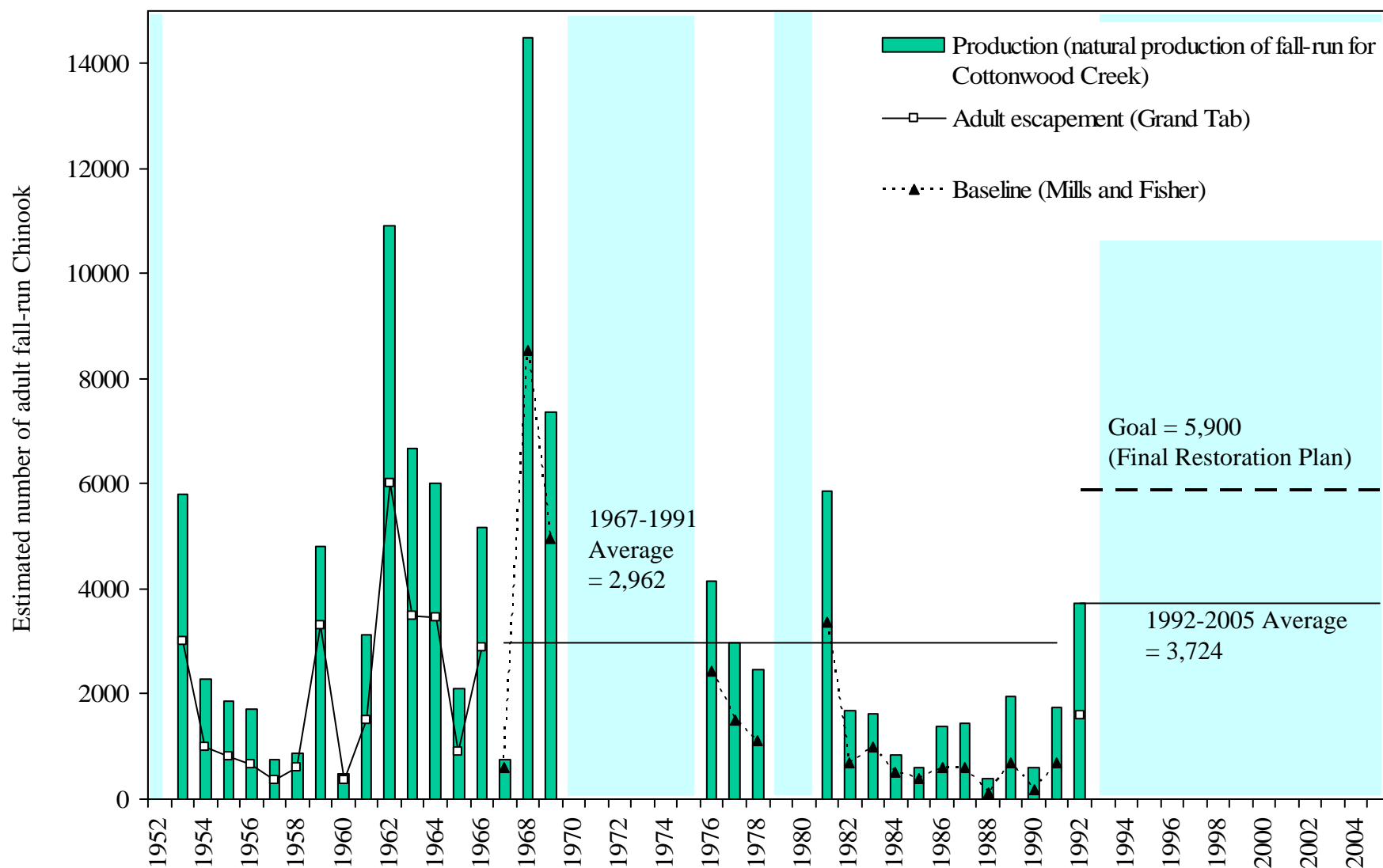
Figure 3. Estimated yearly adult natural production, and in river adult escapements of winter-run Chinook salmon in the Central Valley rivers and streams. 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967-1991) are from Mills and Fisher (CDFG, 1994).
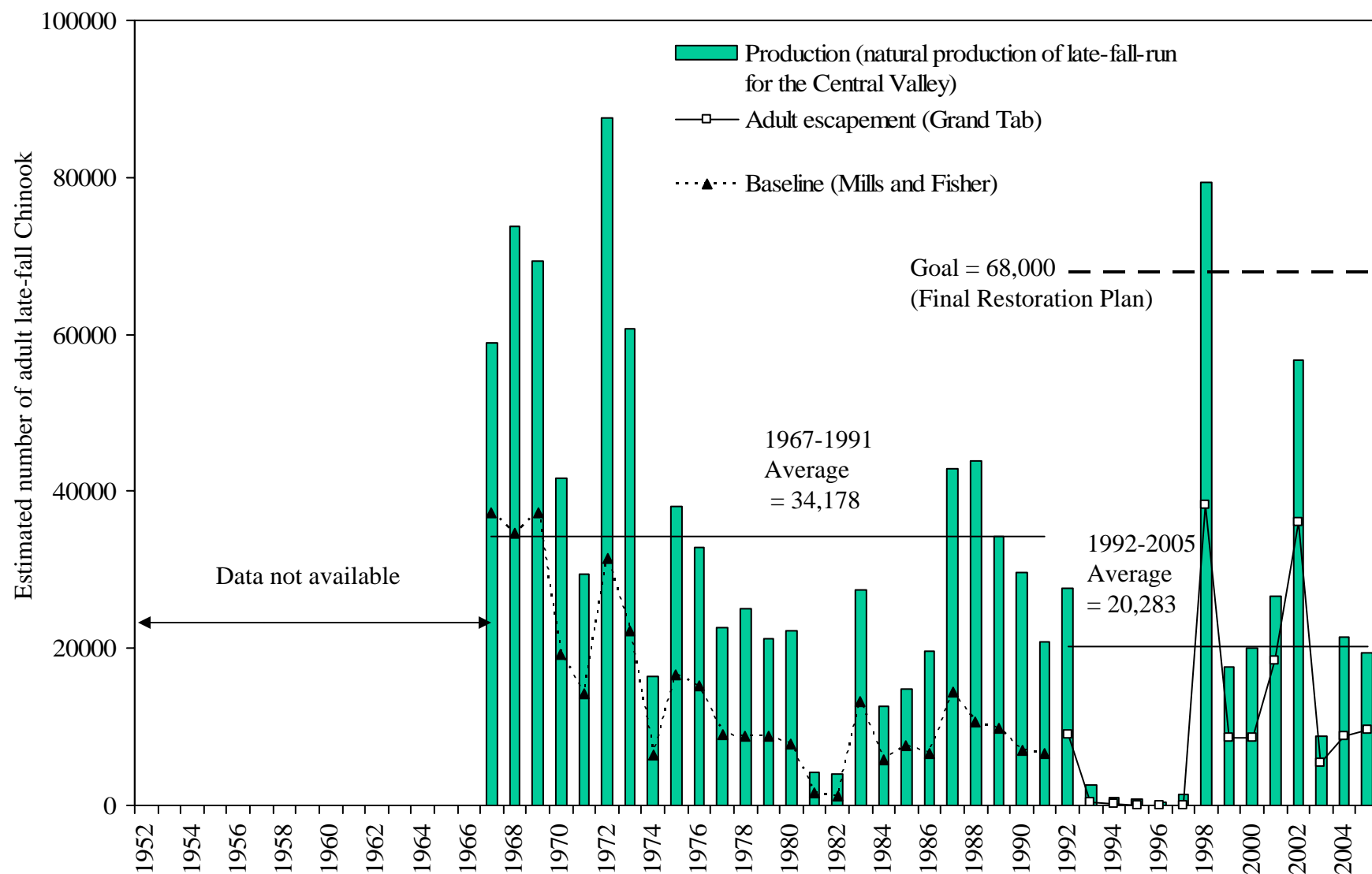
Figure 4. Estimated yearly adult natural production, and in-river adult escapements of late-fall-run Chinook salmon in the Central Valley rivers and streams. 1992 – 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991)are from Mills and Fisher (CDFG, 1994).

Figure 5. Estimated yearly adult natural production, and in-river adult escapements of spring-run Chinook salmon in the Central Valley rivers and streams. 1960 - 1966 and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).
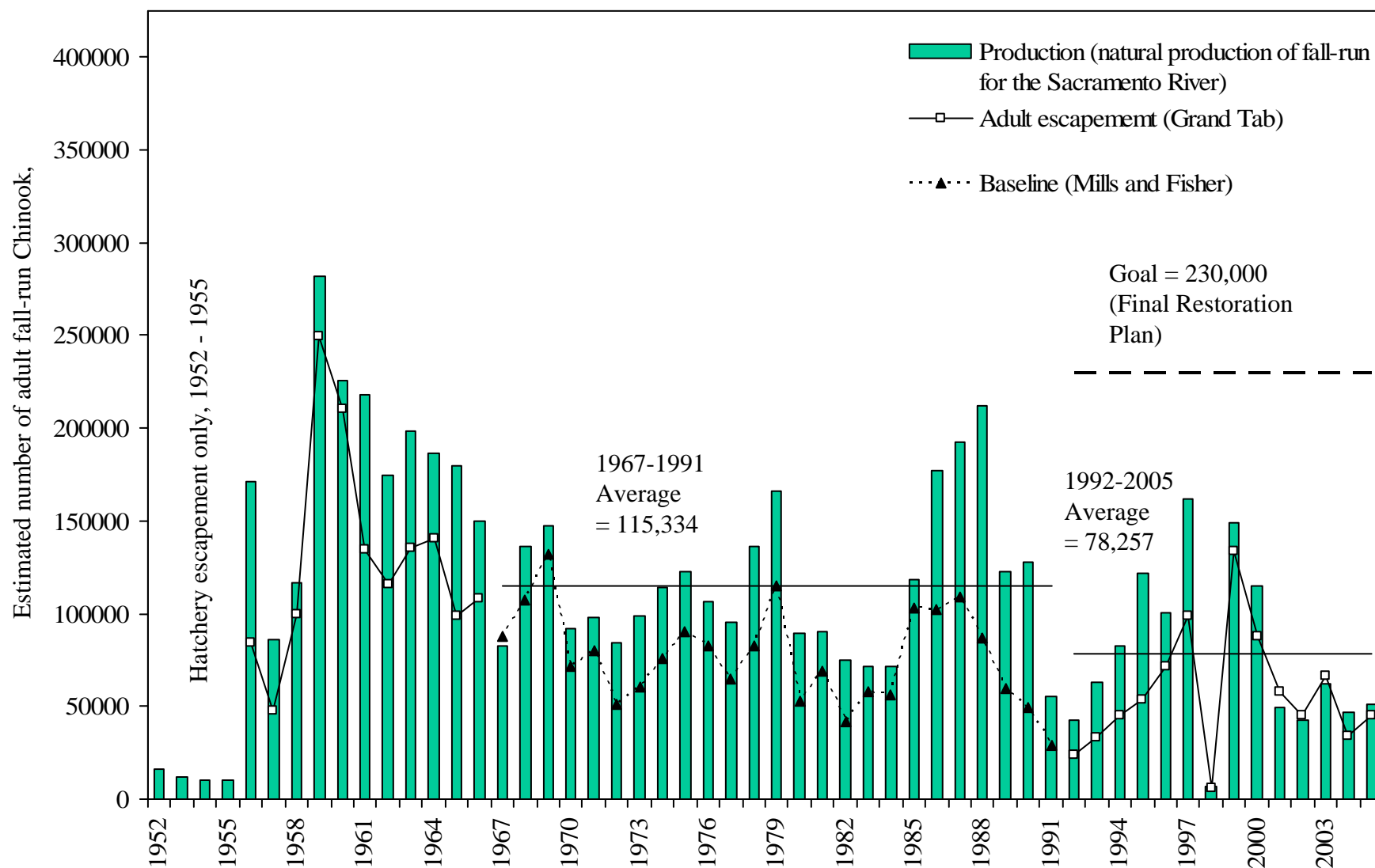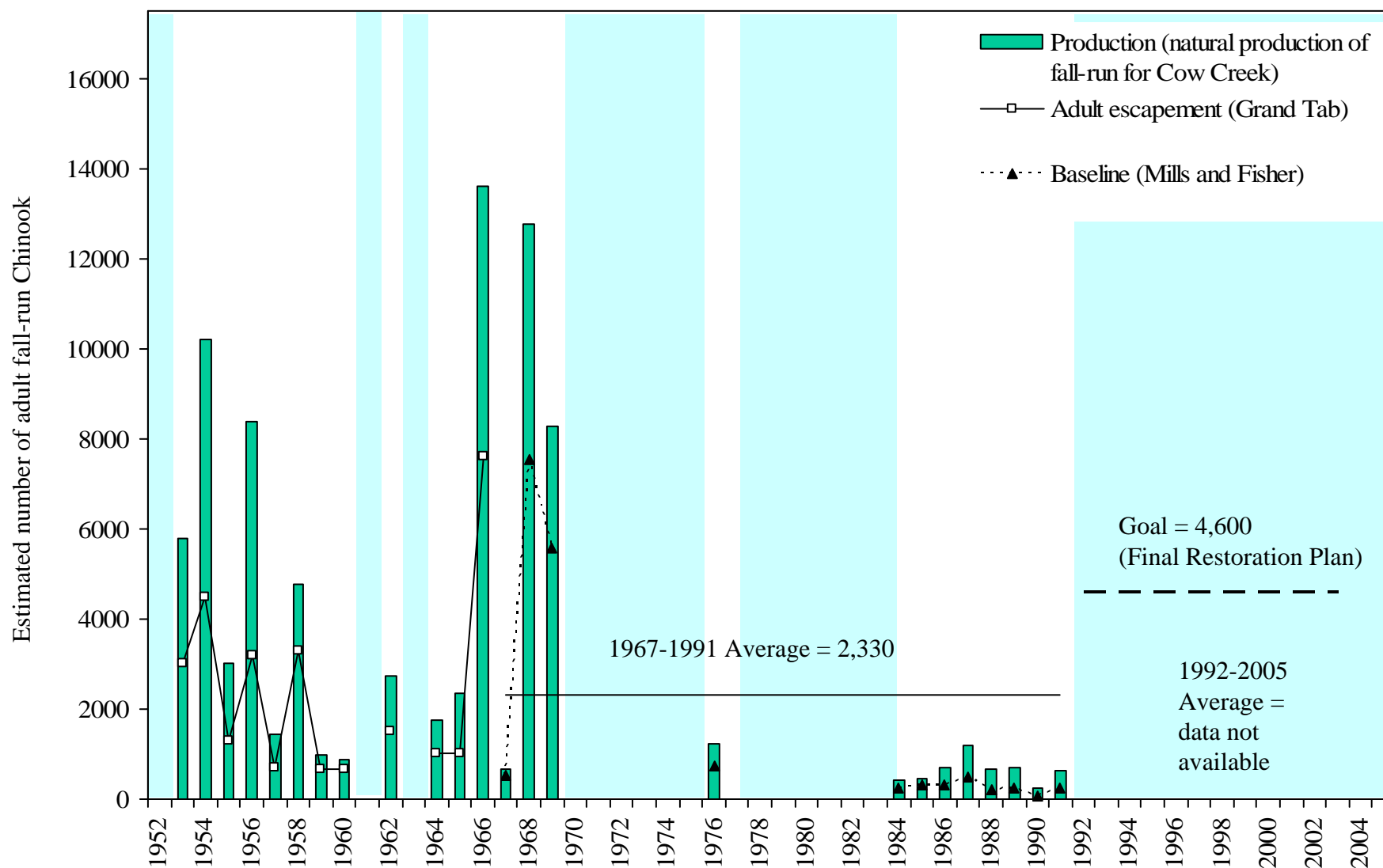
Figure 6. Estimated yearly adult natural production, and in-river adult escapements for the entire mainstem Sacramento River fall-run Chinook salmon. 1952 - 1966 and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).
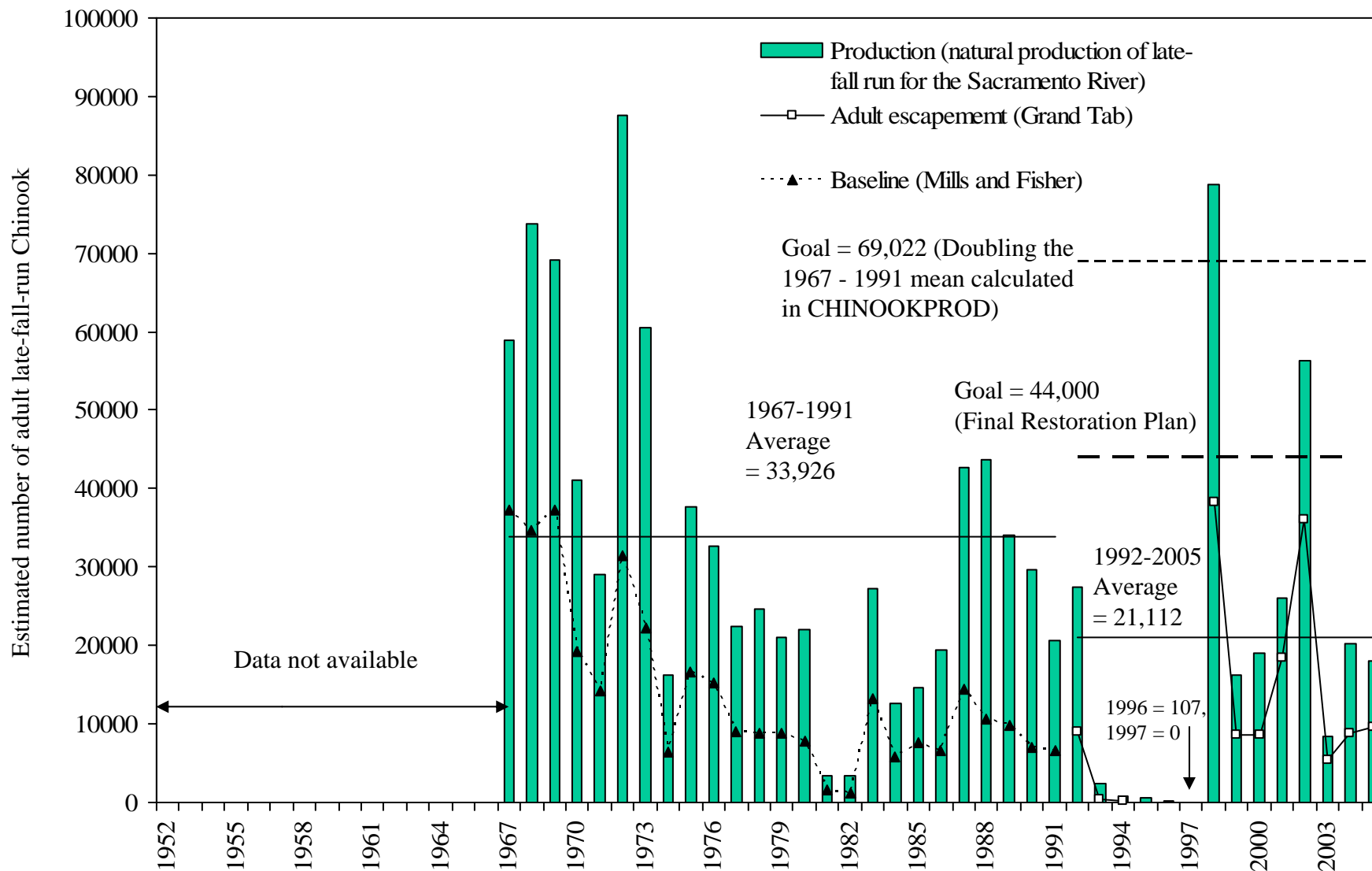
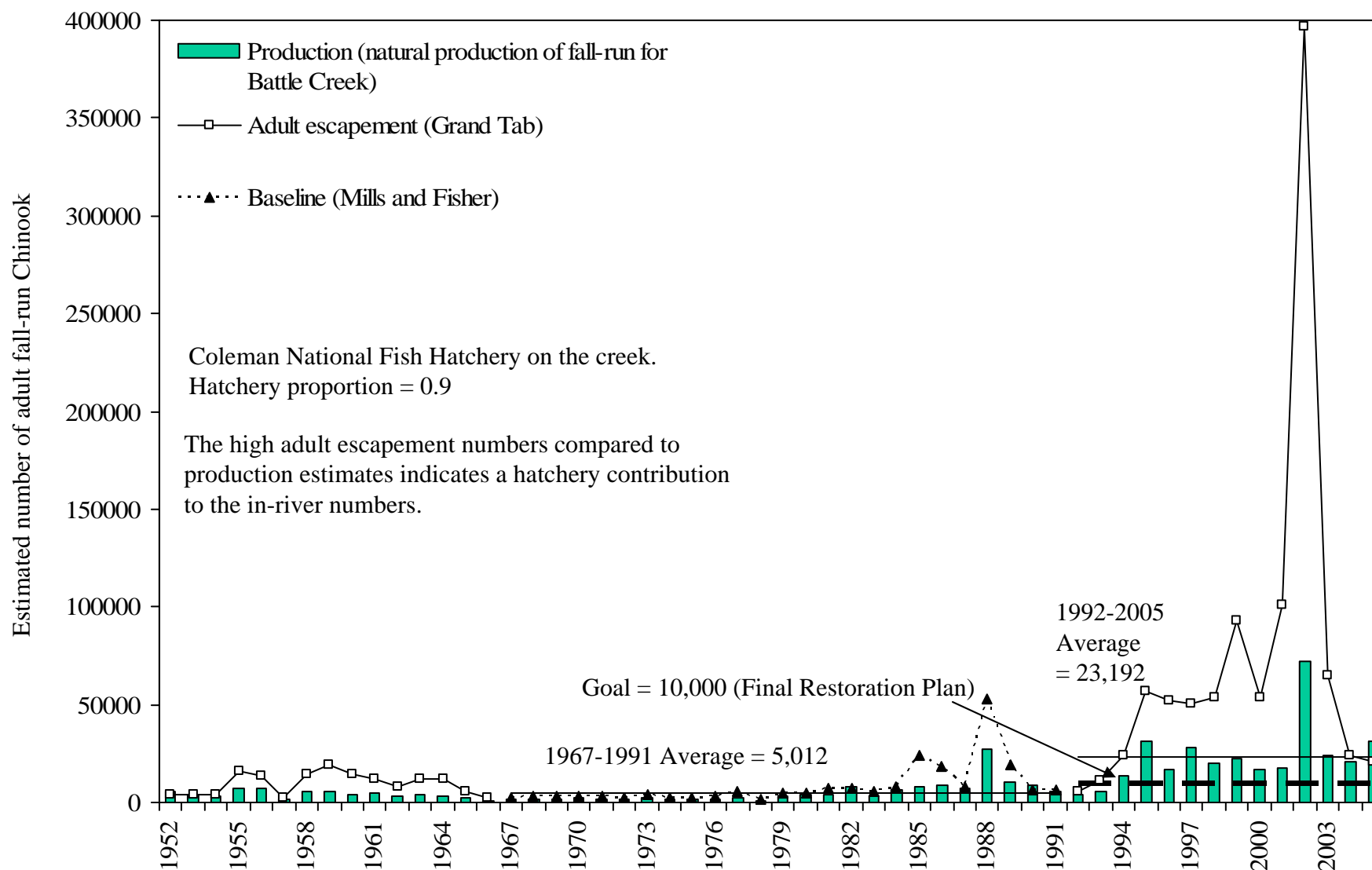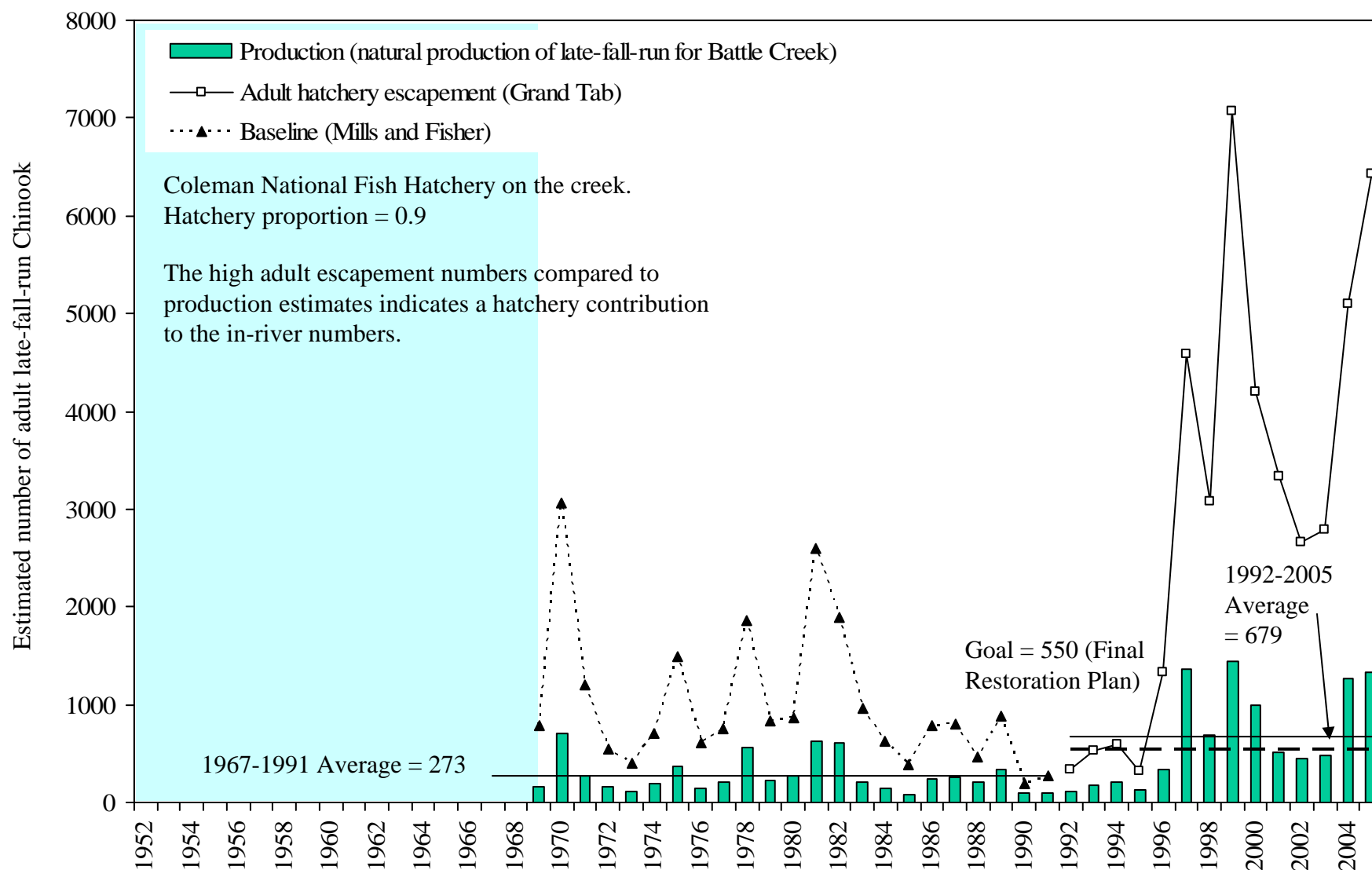Figure 7. Estimated yearly adult natural production, and in-river adult escapements for above RBDD mainstem Sacramento River late-fall-run Chinook salmon.1992 -2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 – 1991) are from Mills and Fisher (CDFG, 1994). Note that the doubling goal in the Final Restoration Plan is not double the 1967 – 1991 arithmetic mean as calculated in CHINOOKPROD.
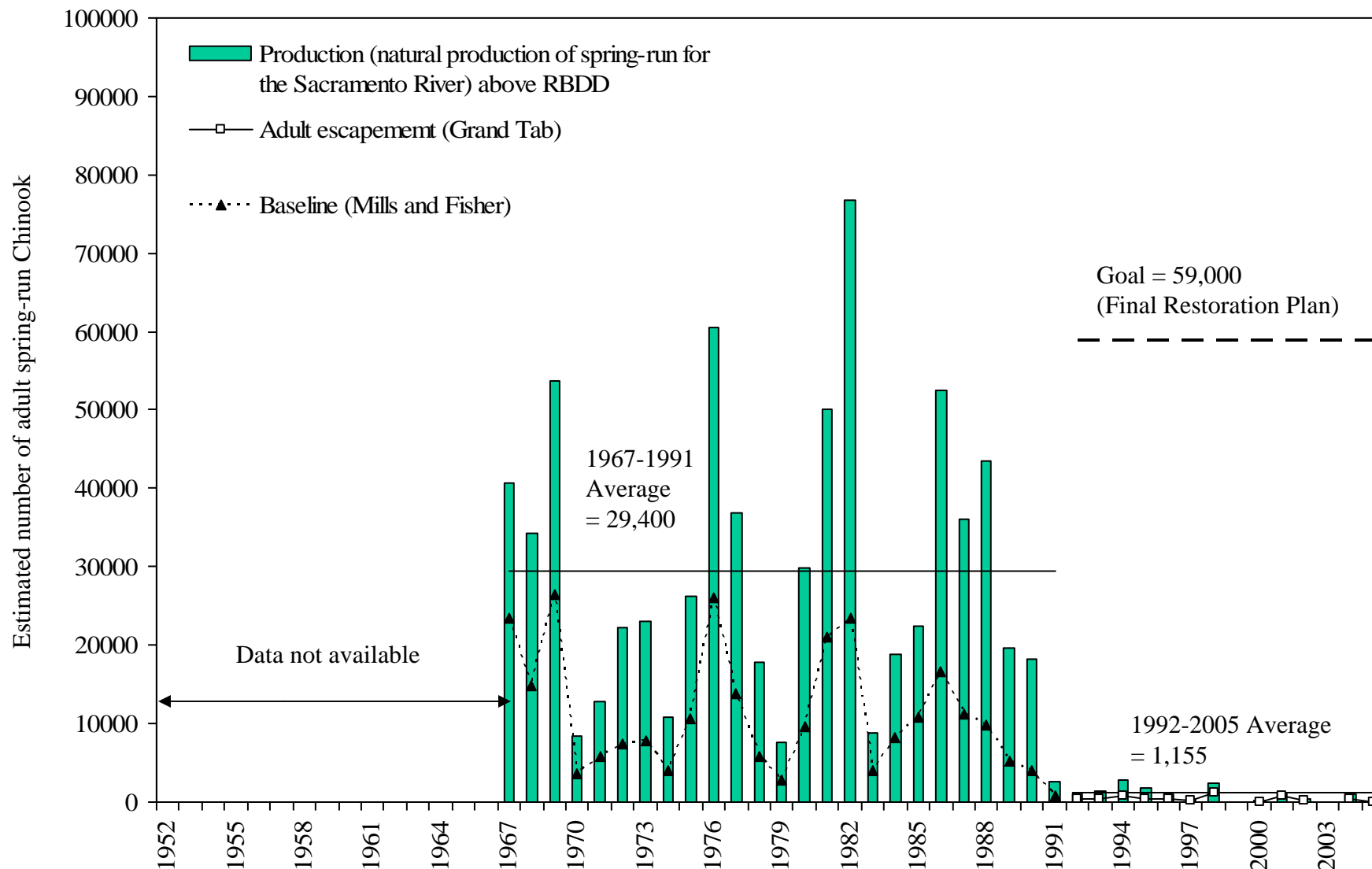
Figure 8. Estimated yearly adult natural production, and in river adult escapements for above RBDD mainstem Sacramento River spring-run Chinook salmon. 1992-2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).

Figure 9. Estimated yearly adult natural production, and in river adult escapements for above RBDD mainstem Sacramento River winter-run Chinook salmon. 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).
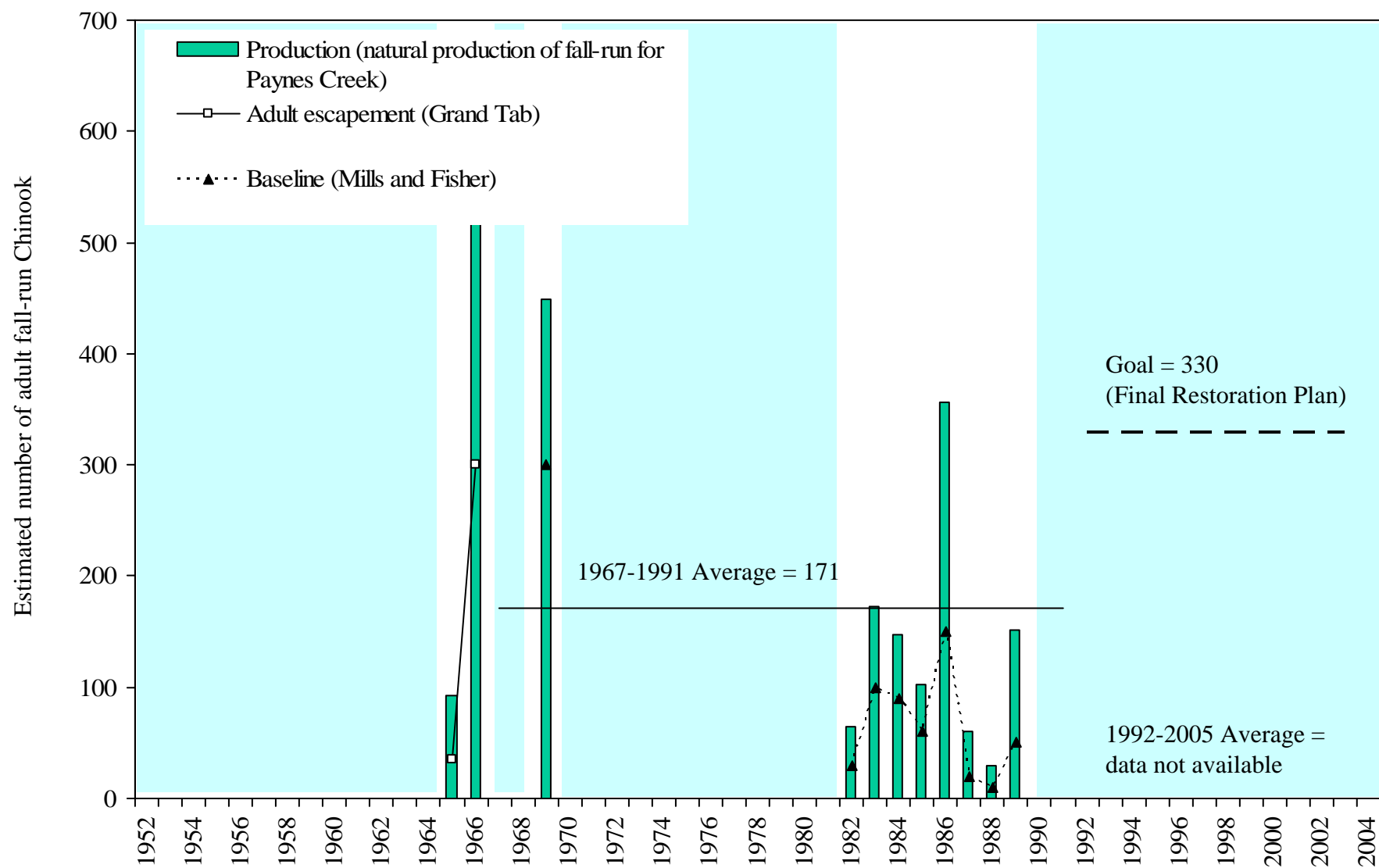
Figure 10. Estimated yearly adult natural production, and in river adult escapements of Clear Creek fall-run Chinook salmon. = data was not available for 1952, 1961, 1970-1975, 1979 and 1980. 1953 – 1966 and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).
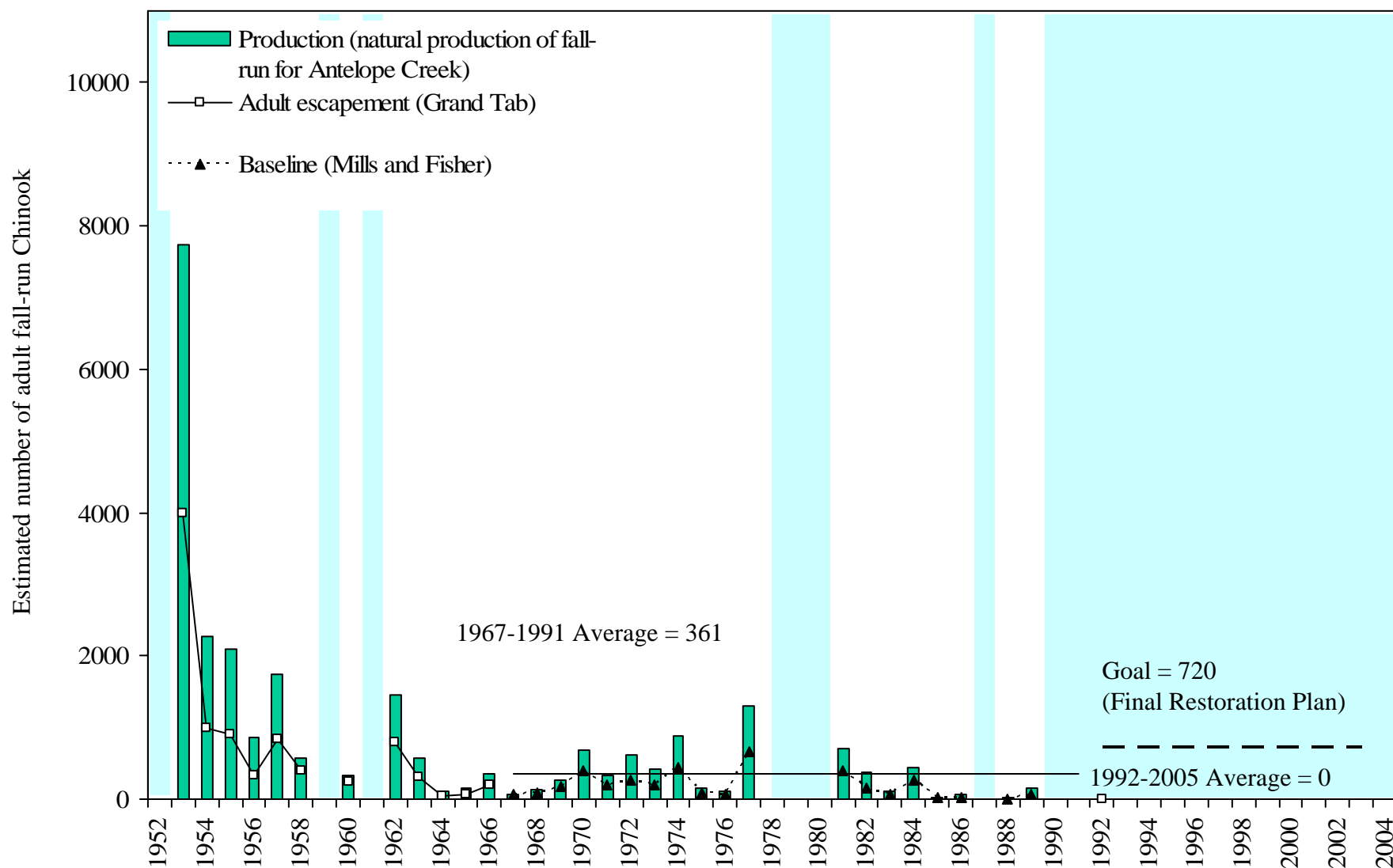
Figure 11. Estimated yearly adult natural production, and in river adult escapements of Cottonwood Creek fall-run Chinook salmon.
= data was not available for 1952, 1970 - 1975, 1979 - 1980 and 1993 - 2005. 1952 - 1966 and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).
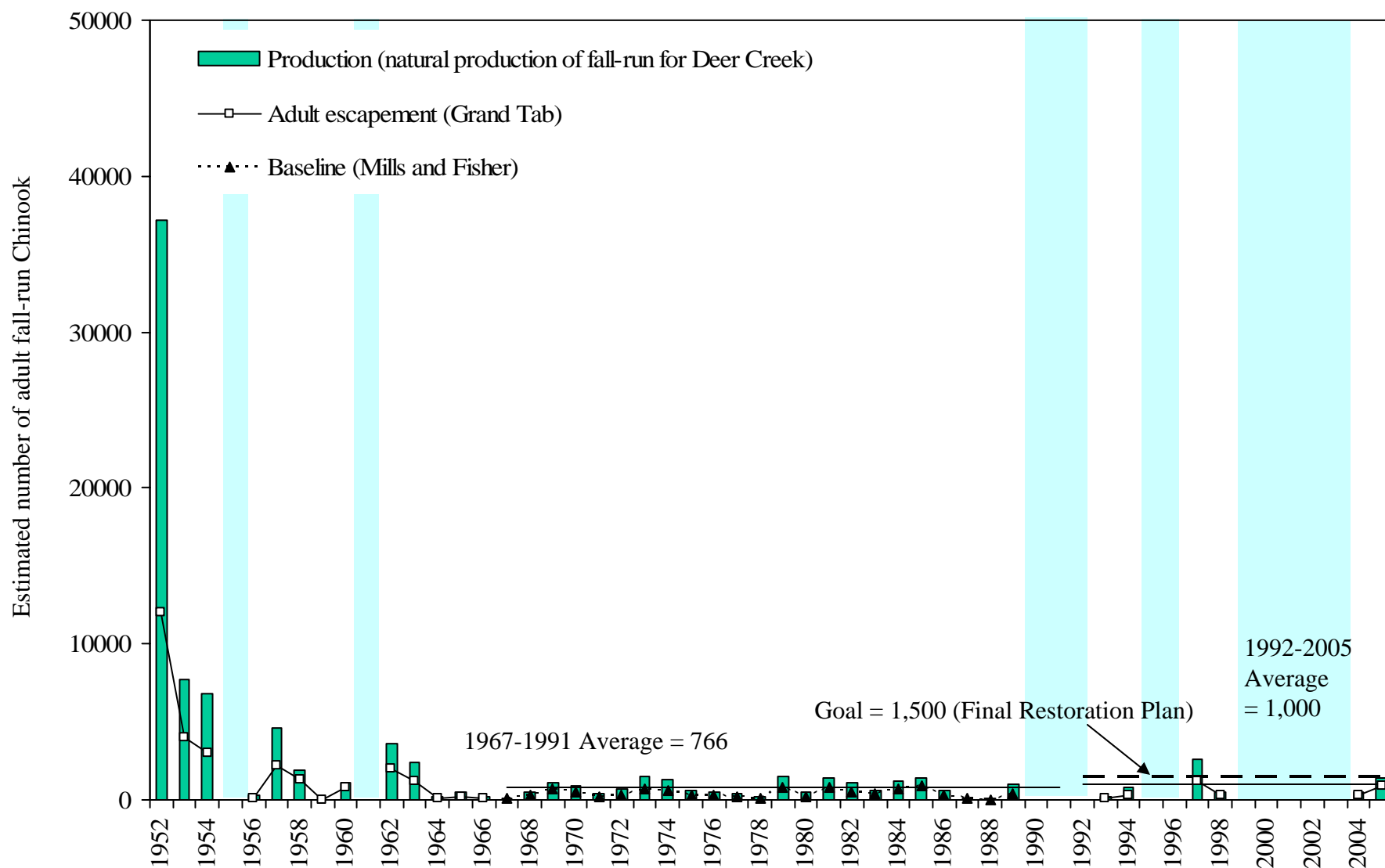
Figure 12. Estimated yearly natural production, and in river escapements of Cow Creek adult fall-run Chinook salmon.
     ☐ = data was not available for 1952, 1961, 1963, 1970 - 1975, 1977 - 1983, and 1992 - 2005. 1952 - 1966 numbers
are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).

Figure 13. Estimated yearly natural production, and in river escapements of Battle Creek adult fall-run Chinook salmon. 1952 - 1966 and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).
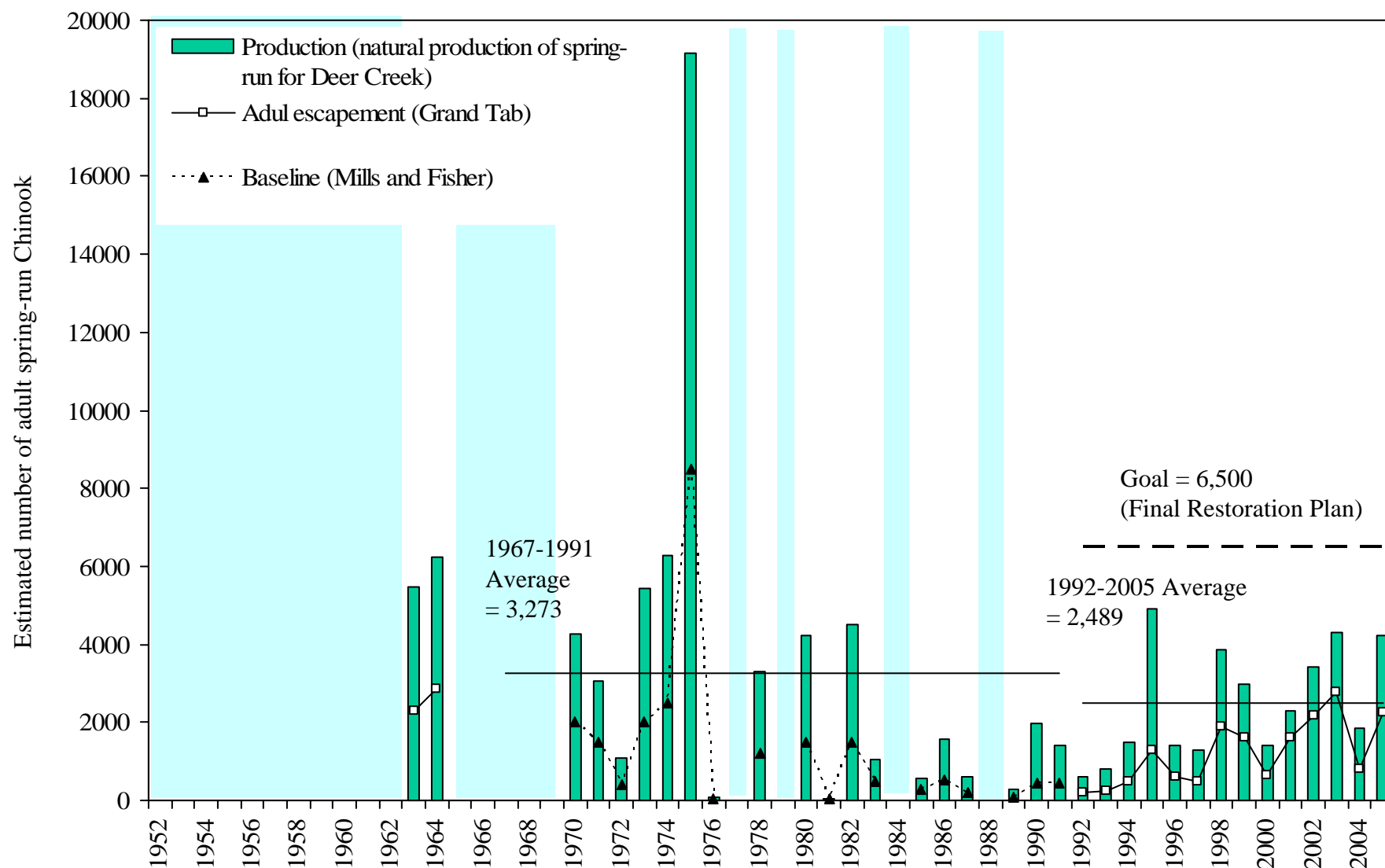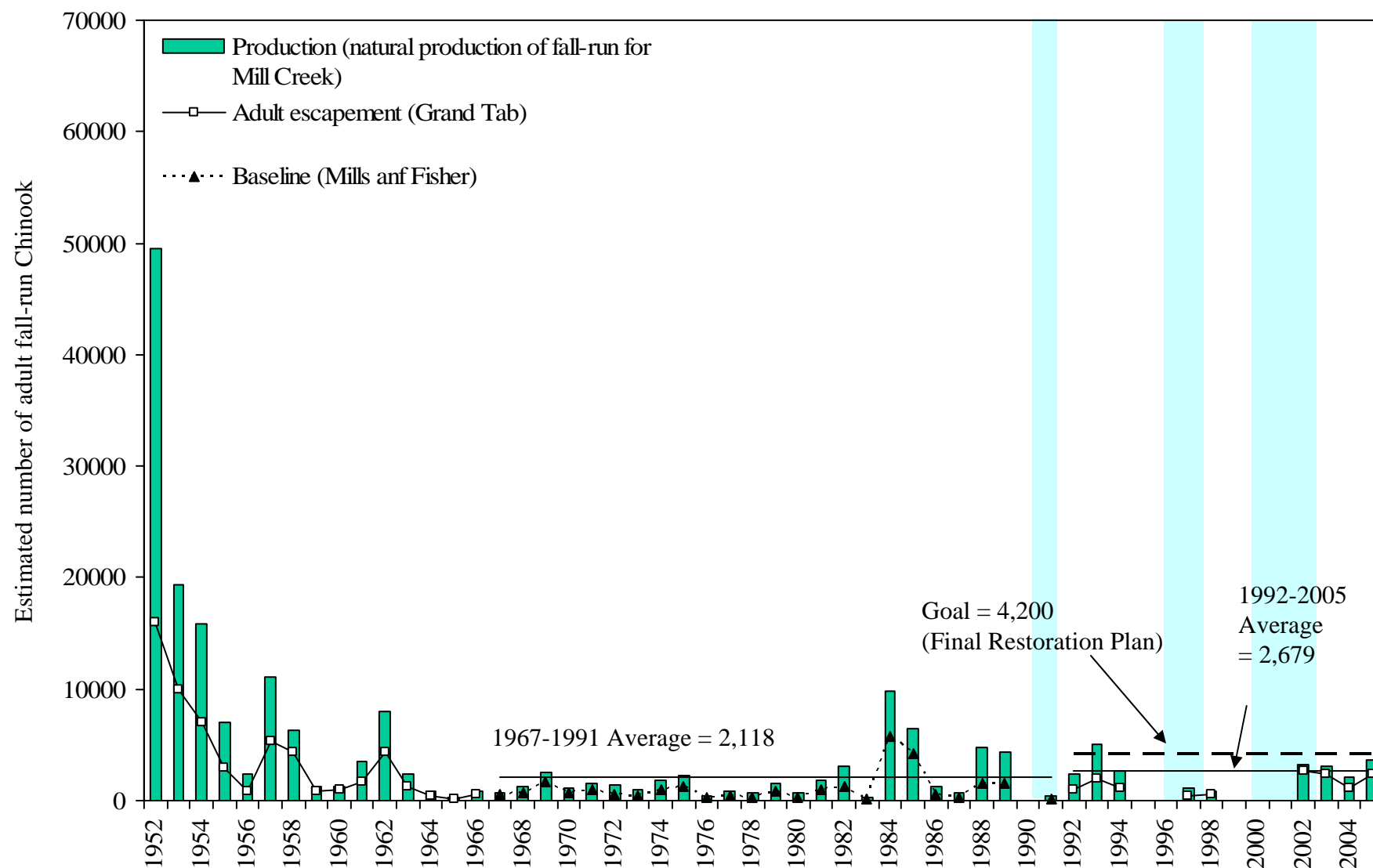
Figure 14. Estimated yearly natural production calculated from hatchery returns (in river returns were not available), and hatchery returns of Battle Creek adult late-fall-run Chinook salmon. 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). ☐ = data was not available for 1952-1968. Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).

Figure 15. Estimated yearly natural production, and in river escapements of Paynes Creek adult fall-run Chinook salmon.
    ☐ = data was not available for 1952 - 1964, 1967 - 1968, 1970 - 1981, and 1990 - 2005. 1965-1966 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).

Figure 16. Estimated yearly natural production, and in river escapements of Antelope Creek adult fall-run Chinook salmon.
☐ = data was not available for 1952, 1959, 1961, 1978 - 1980, 1987, 1990, 1991, and 1993 - 2005. 1952 - 1966 and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).
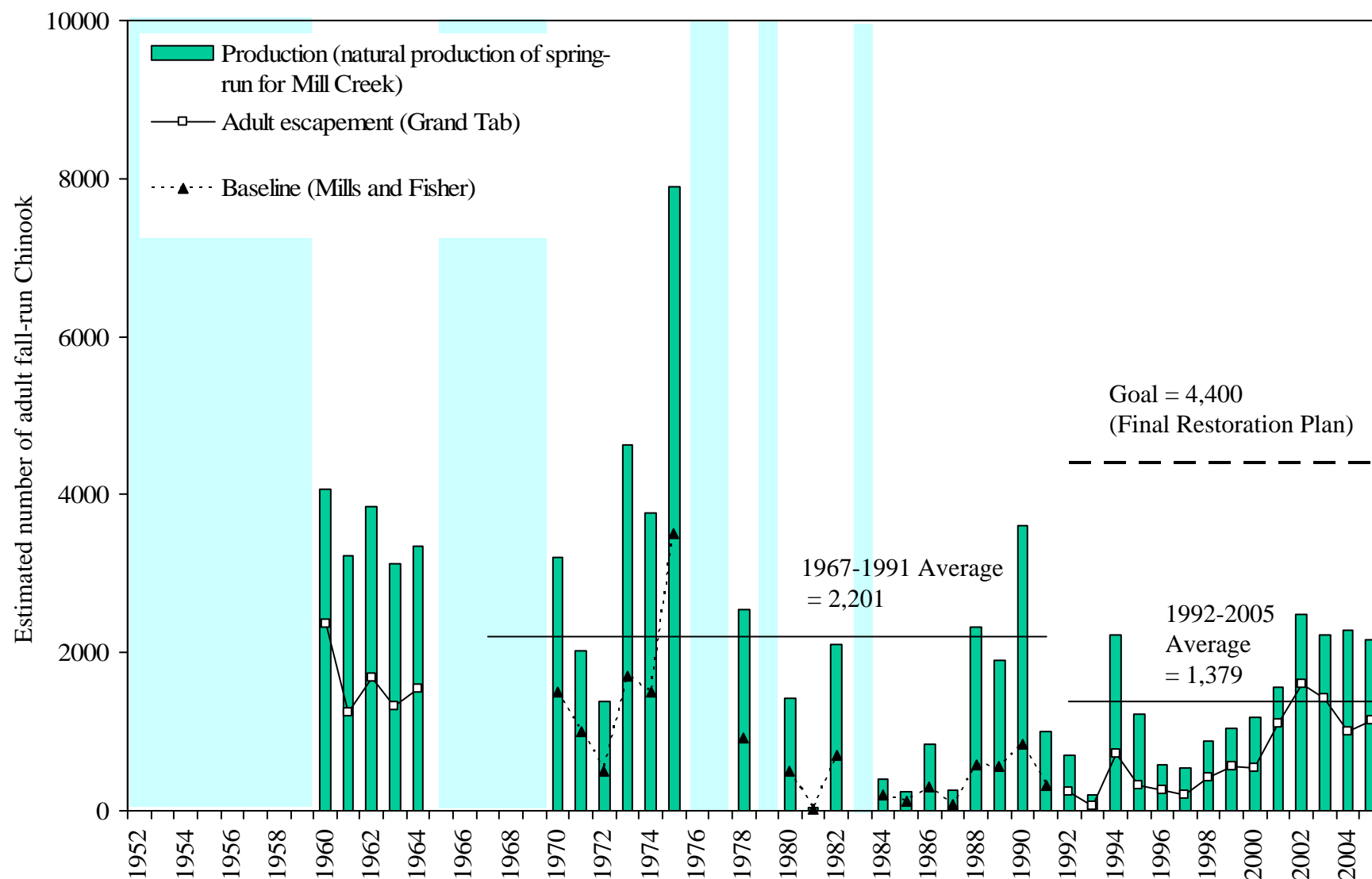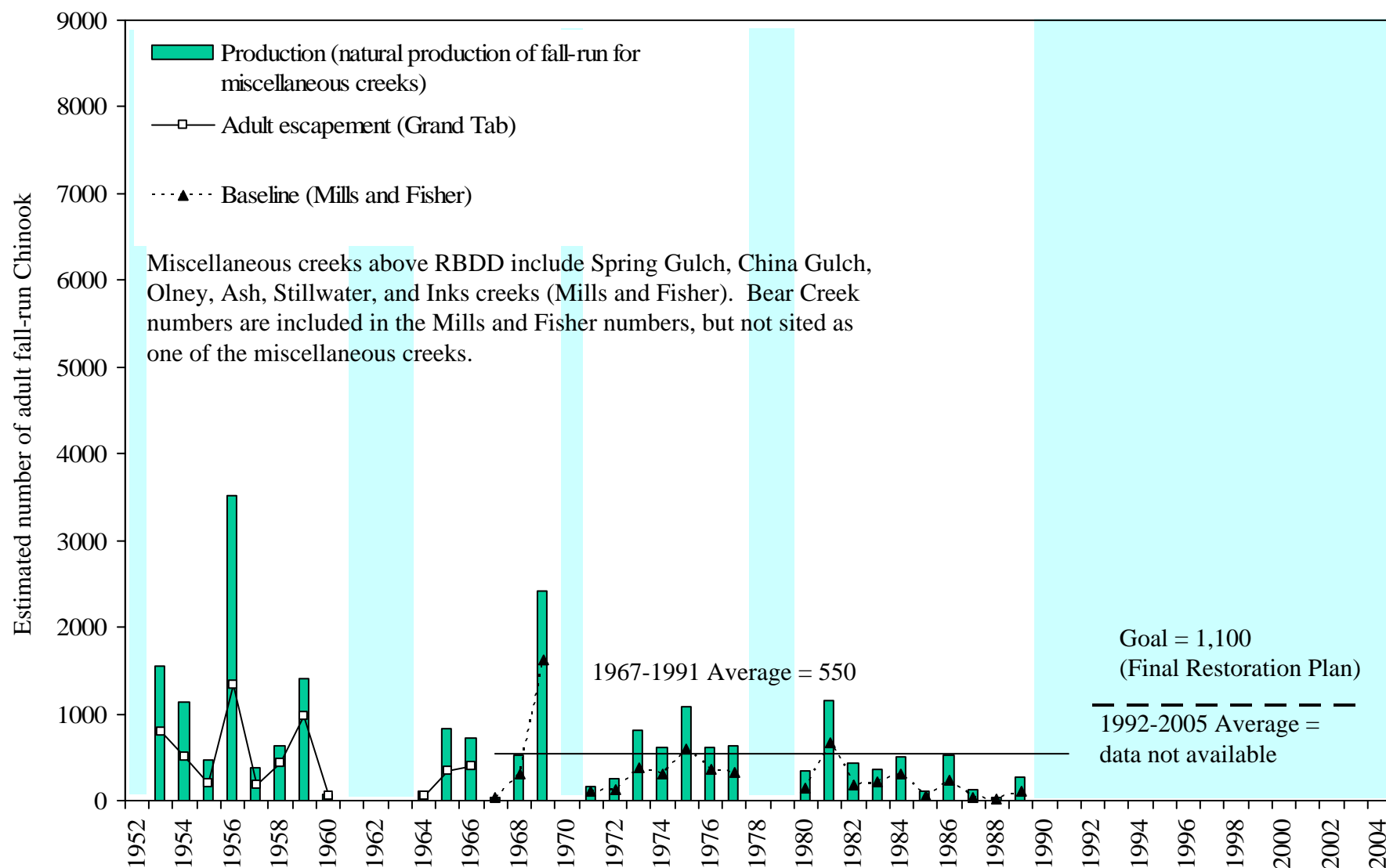
Figure 17. Estimated yearly natural production, and in river escapements of Deer Creek adult fall-run Chinook salmon.
⬜ = data was not available for 1955, 1961, 1990 - 1992, 1995, 1996, and 1999 - 2003. 1952 - 1966 and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).
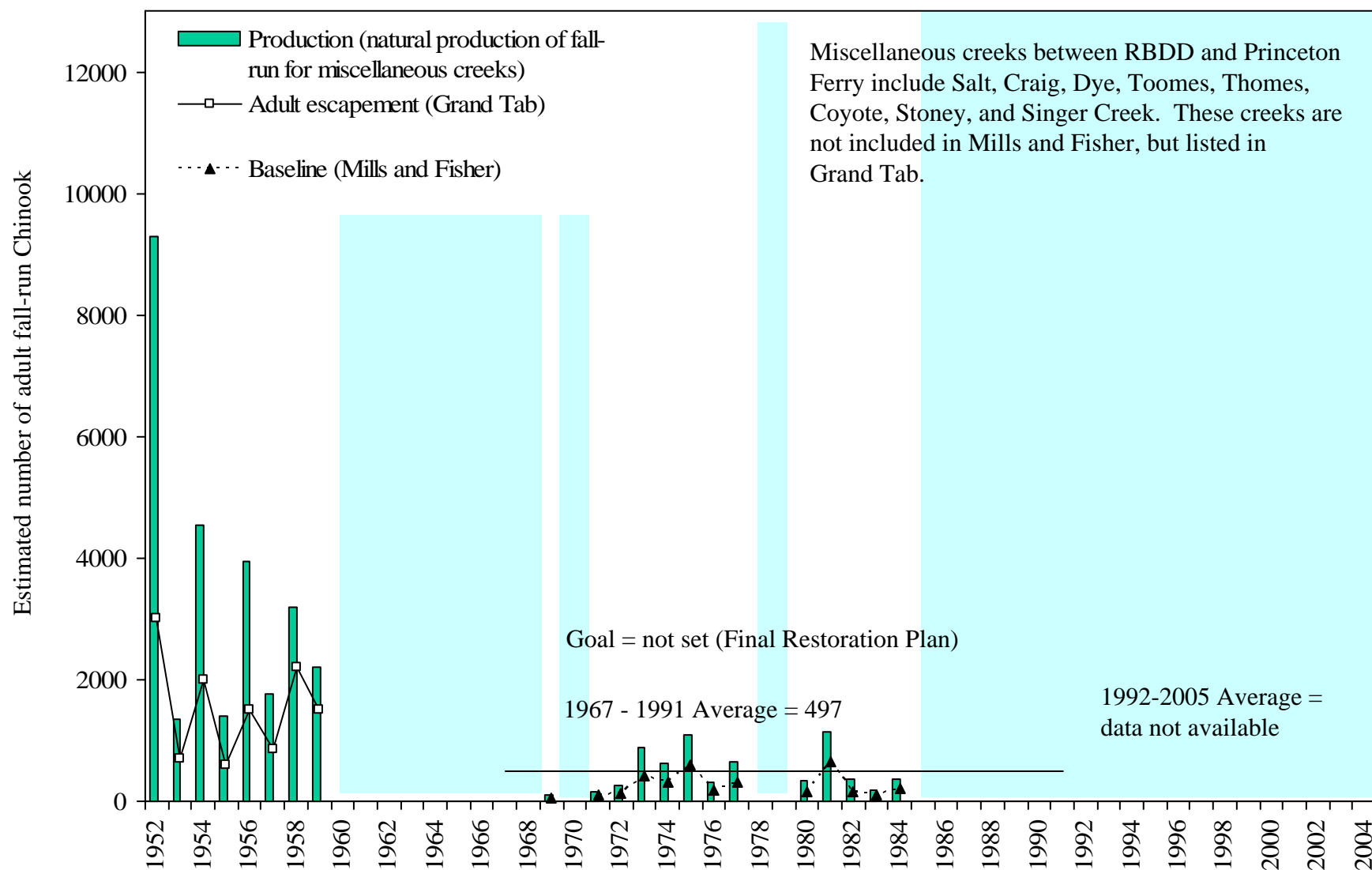
Figure 18. Estimated yearly natural production, and in river escapements of Deer Creek adult spring-run Chinook salmon.
☐ = data was not available for 1952 - 1962, 1965 - 1969, 1977, 1979, 1984, and 1988. 1952 - 1966, and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).
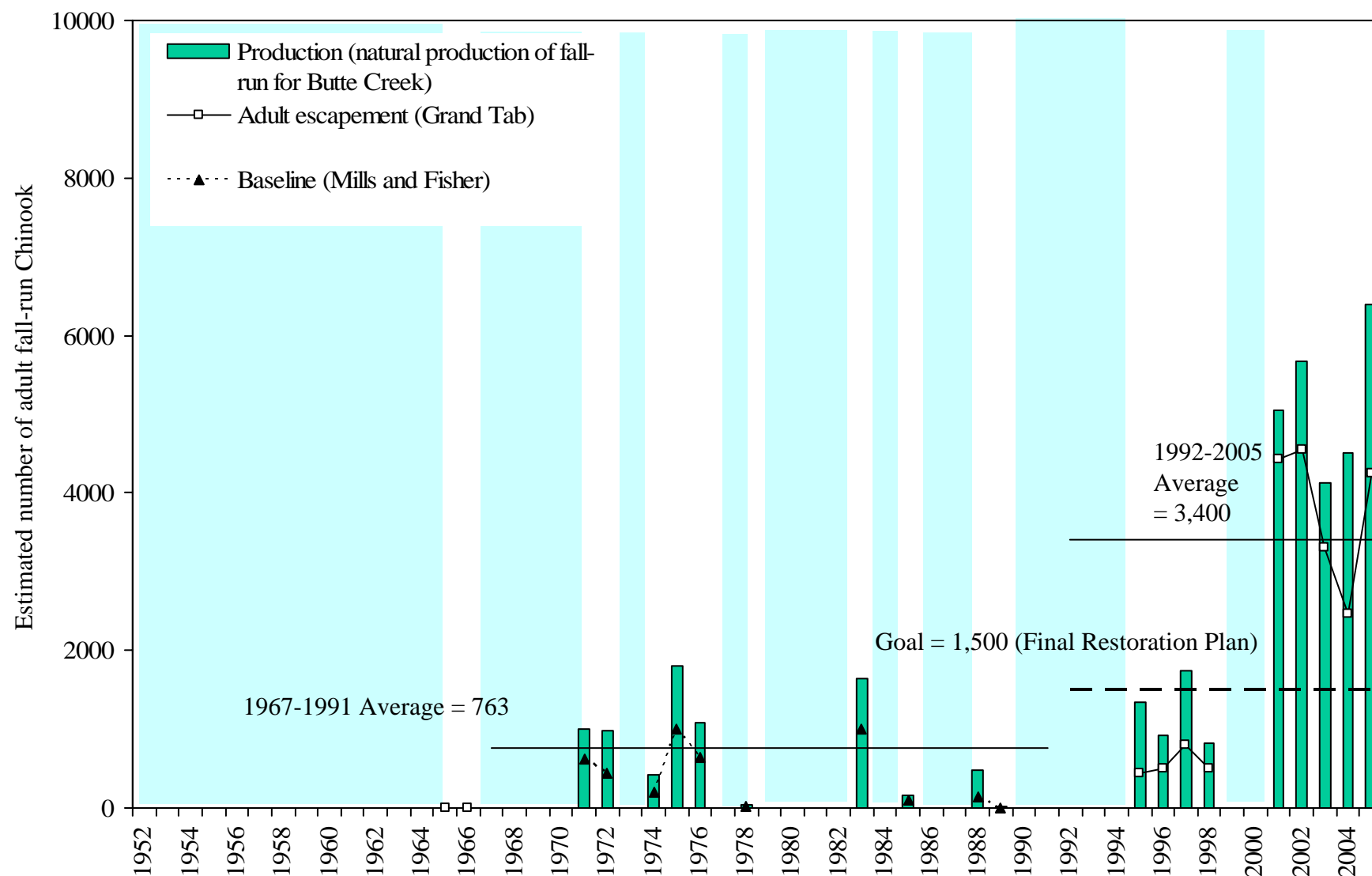
Figure 19. Estimated yearly natural production, and in river escapements of Mill Creek adult fall-run Chinook salmon.
☐ = data was not available for 1990, 1995 - 1996, and 1999 - 2001. 1952 -1966 and 1992 – 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 – 1991) are from Mills and Fisher (CDFG, 1994).

Figure 20. Estimated yearly natural production, and in river escapements of Mill Creek adult spring-run Chinook salmon.
☐ = data was not available for 1952 - 1959, 1965 - 1969, 1976, 1977, 1979, and 1983. 1952 - 1966 and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).
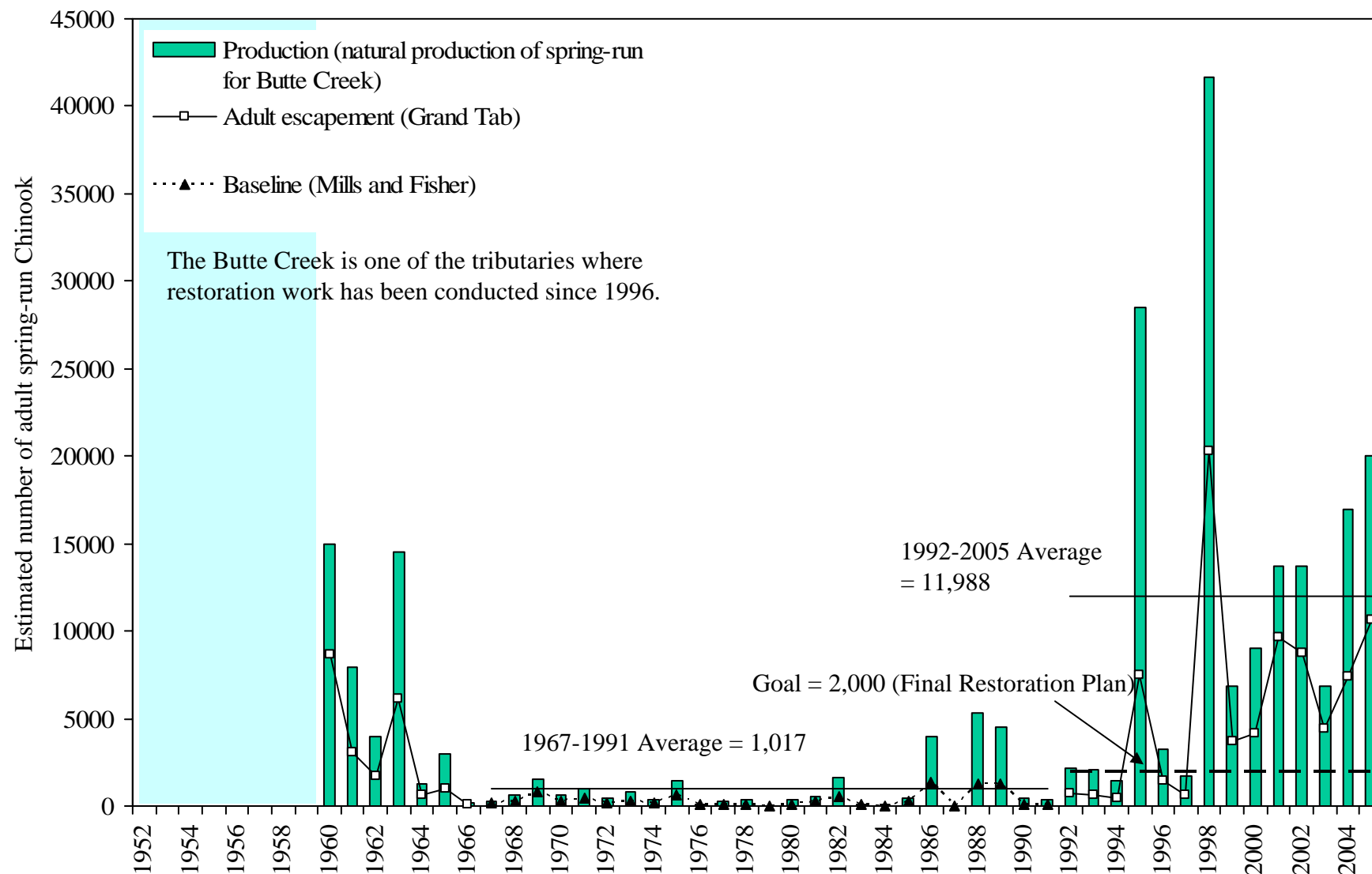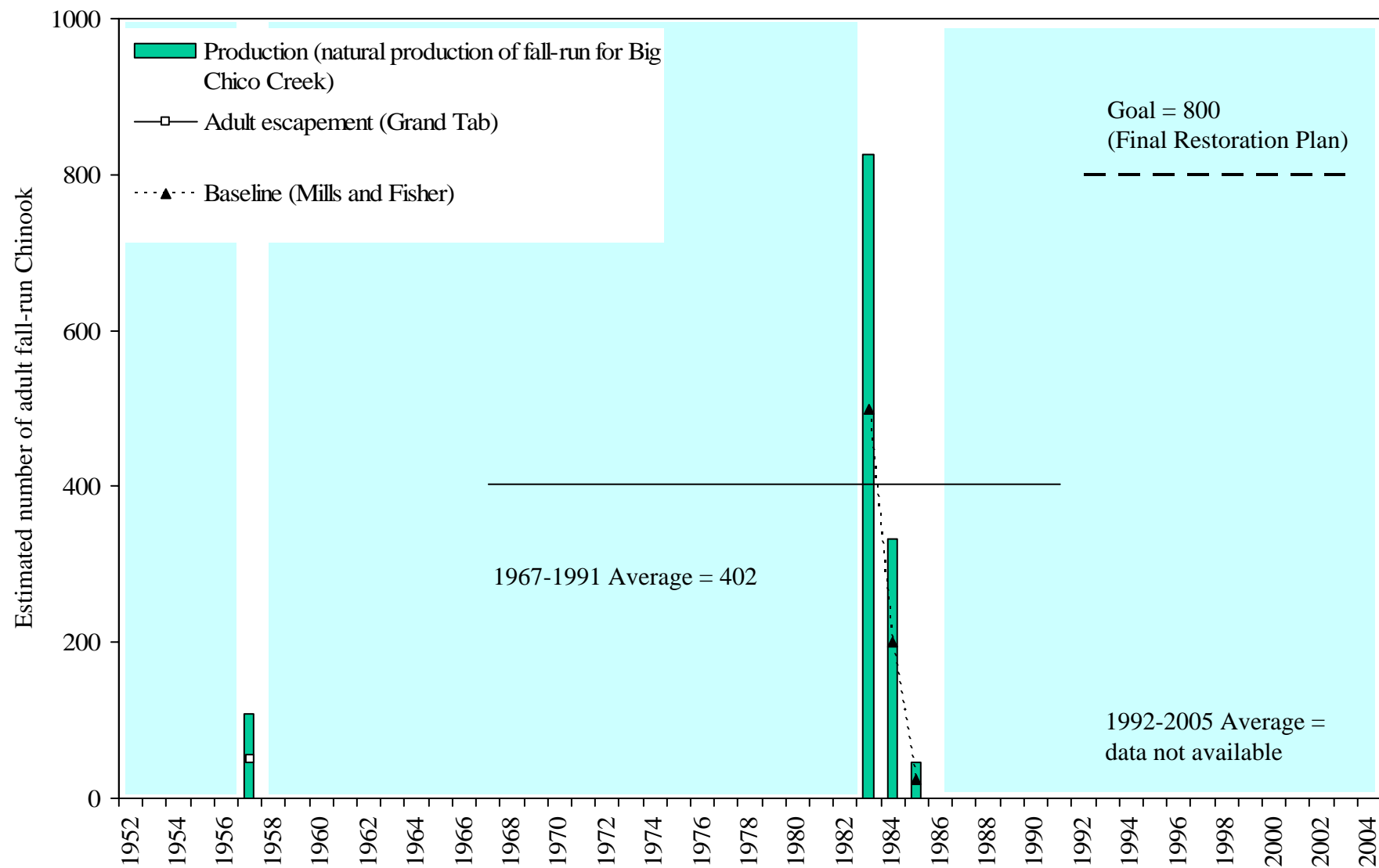
Figure 21. Estimated yearly natural production of miscellaneous creeks adult fall-run Chinook salmon above RBDD.
☐ = data was not available for 1952, 1961 - 1963, 1970, 1978 - 1979, and 1990 - 2005. 1952 – 1966 and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).

Figure 22. Estimated yearly natural production of miscellaneous creeks adult fall-run Chinook salmon below RBDD.

☐ = data was not available for 1960-1968, 1970, 1978 - 1979, and 1985 - 2005. 1952 - 1966 and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).
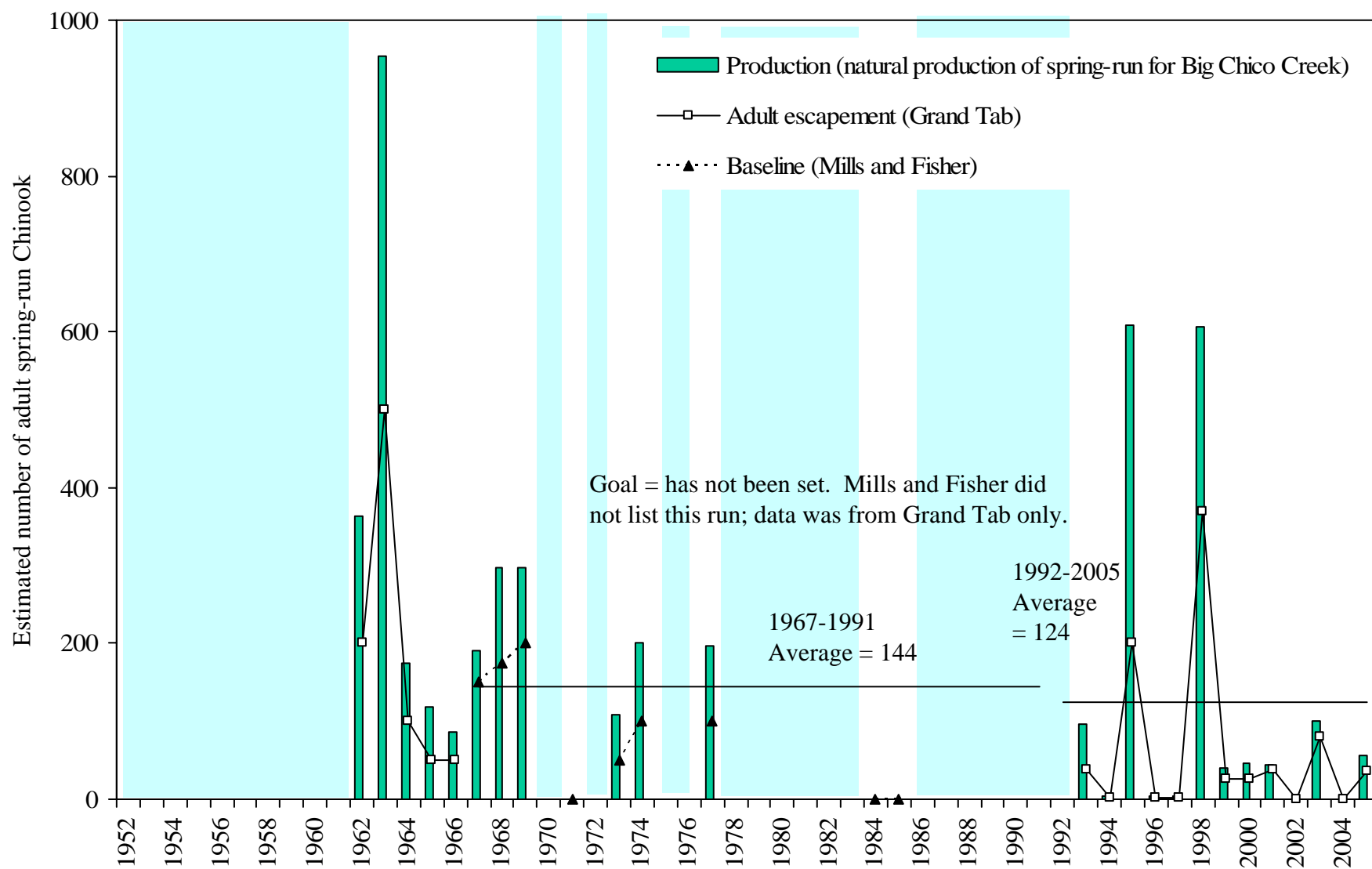
Figure 23. Estimated yearly natural production, and in river escapements of Butte Creek adult fall-run Chinook salmon.
☐ = data was not available for 1952 - 1964, 1967 - 1970, 1973, 1977, 1979 - 1982, 1984, 1986,1987, 1990 -1994, and 1999 - 2001. 1952 - 1966 and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 – 1991) are from Mills and Fisher (CDFG, 1994).

Figure 24. Estimated yearly natural production, and in river escapements of Butte Creek adult spring-run Chinook salmon.
1952- 1966 and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006).   ☐ = data was not available for
1952 - 1959. Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).

Figure 25. Estimated yearly natural production, and in river escapements of Big Chico Creek adult fall-run Chinook salmon.
☐ = data was not available for 1952 - 1956, 1958 - 1982, and 1986 - 2005. 1952 - 1966 and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).
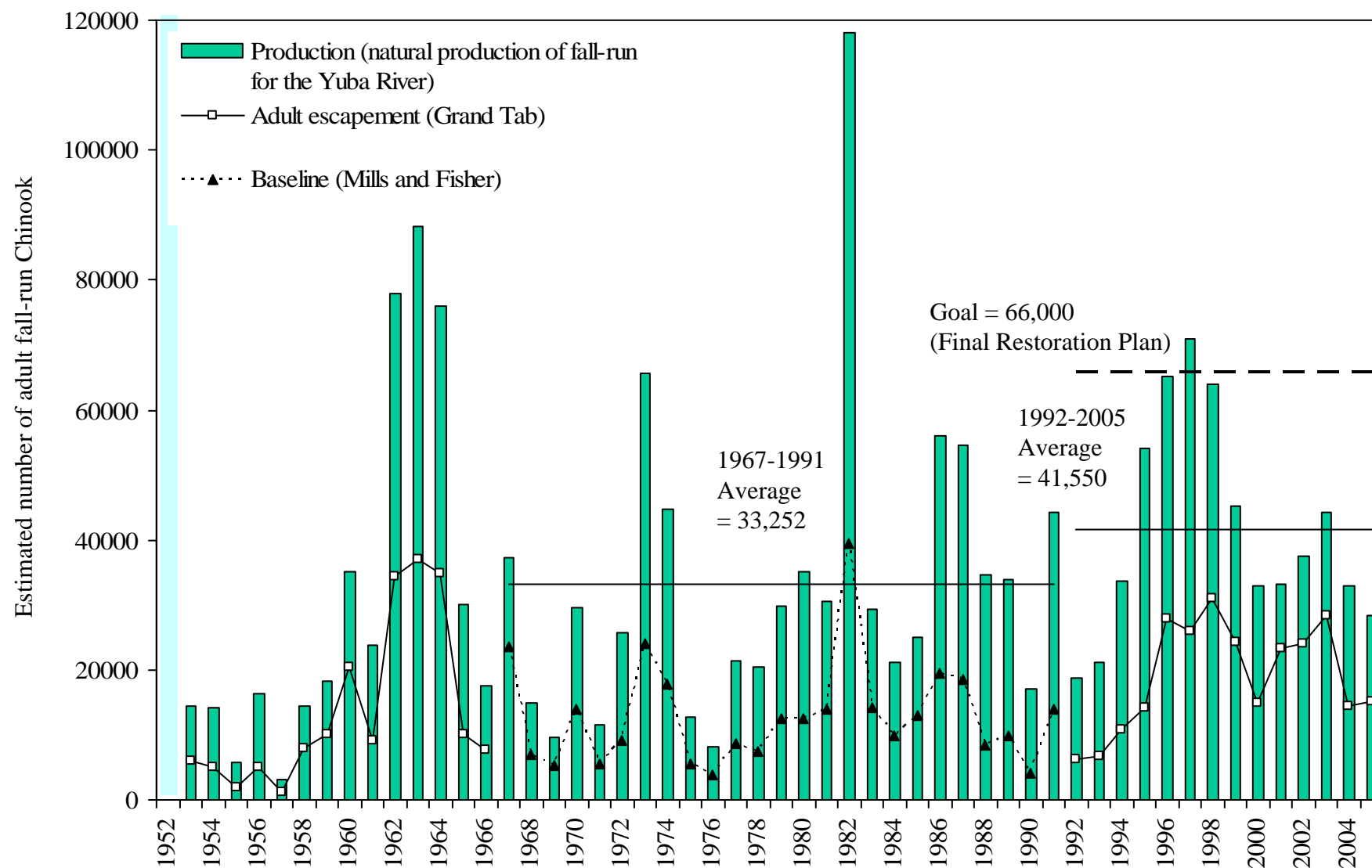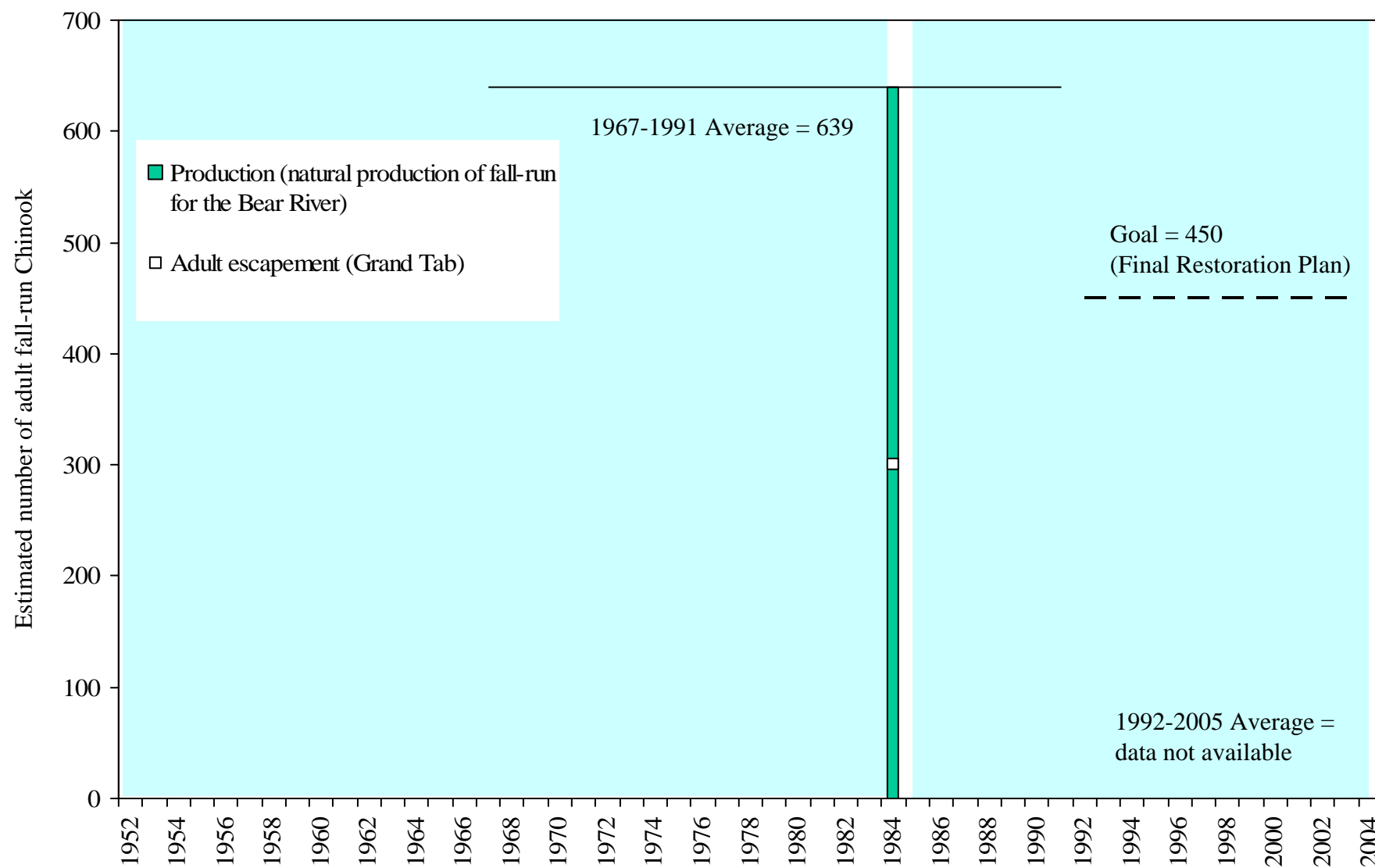
Figure 26. Estimated yearly natural production, and in river escapements of Big Chico Creek adult spring-run Chinook salmon. ☐ = data was not available for 1952 - 1961, 1970, 1972, 1975 - 1976, 1978 - 1983, and 1986 - 1992. 1952 - 2005 numbers are from CDFG Grand Tab (January 31, 2006).
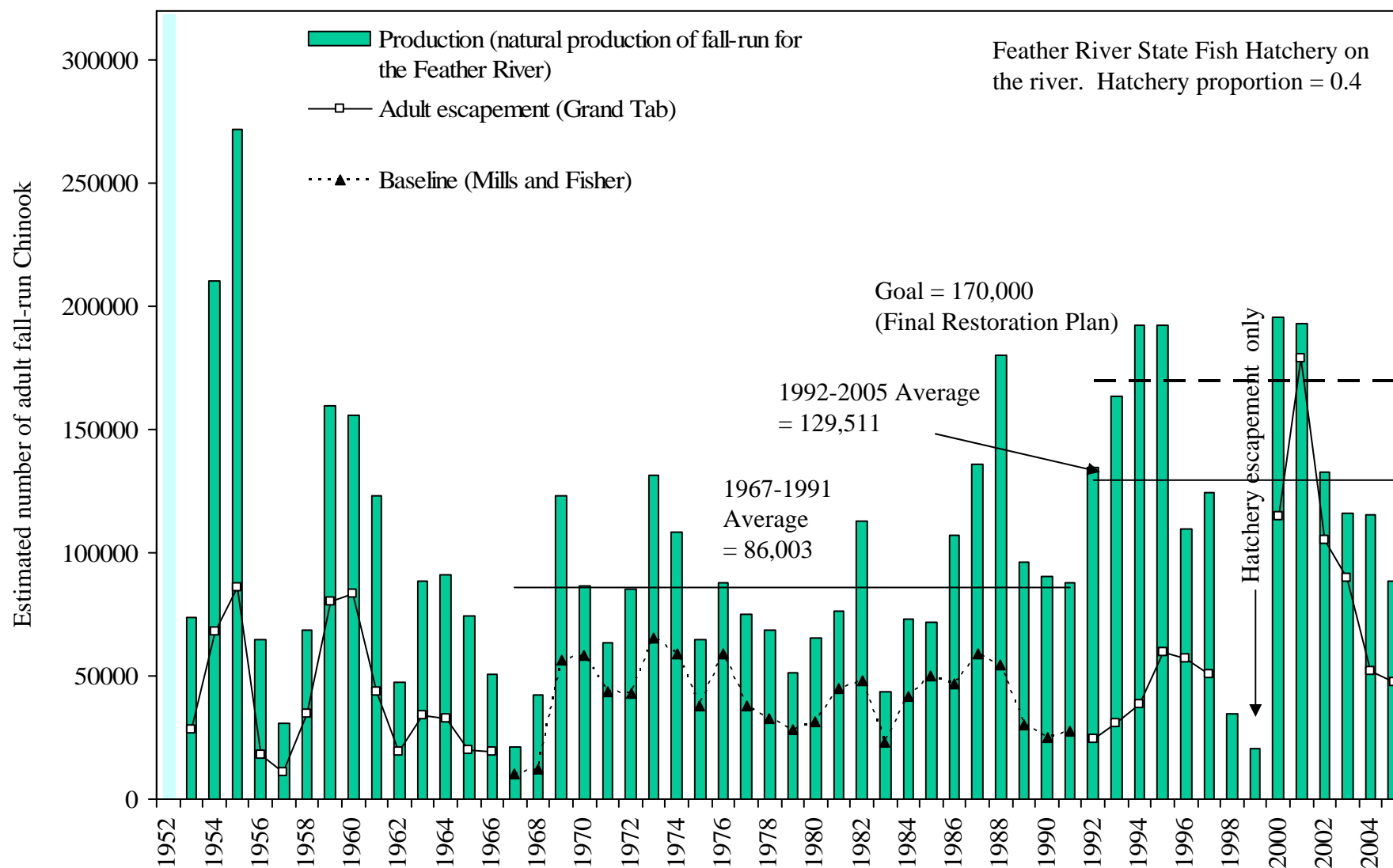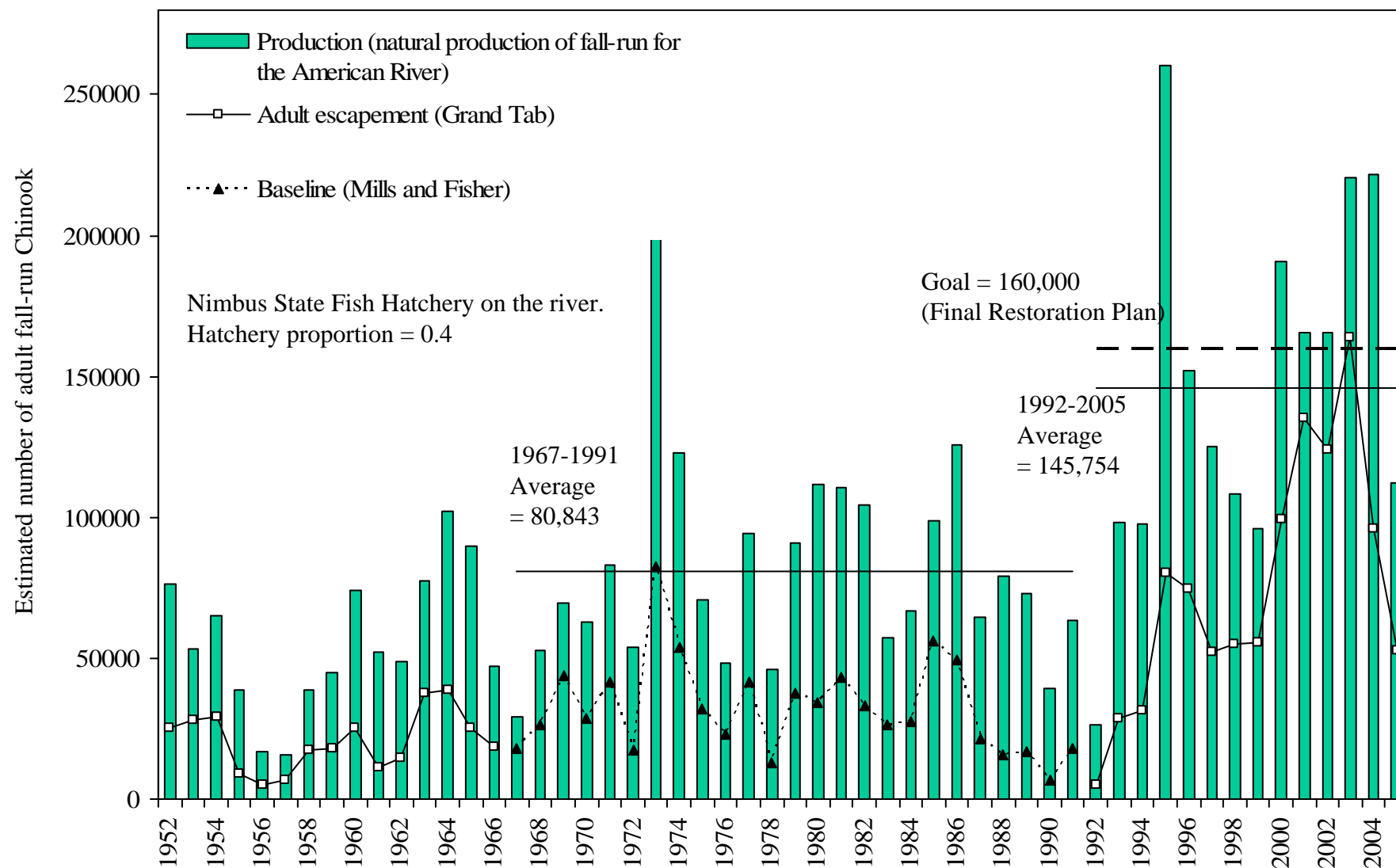
Figure 27. Estimated yearly natural production, and in river escapements of Feather River adult fall-run Chinook salmon. In-river escapements were not available for 1998 and 1999. 1952 - 1966 and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).
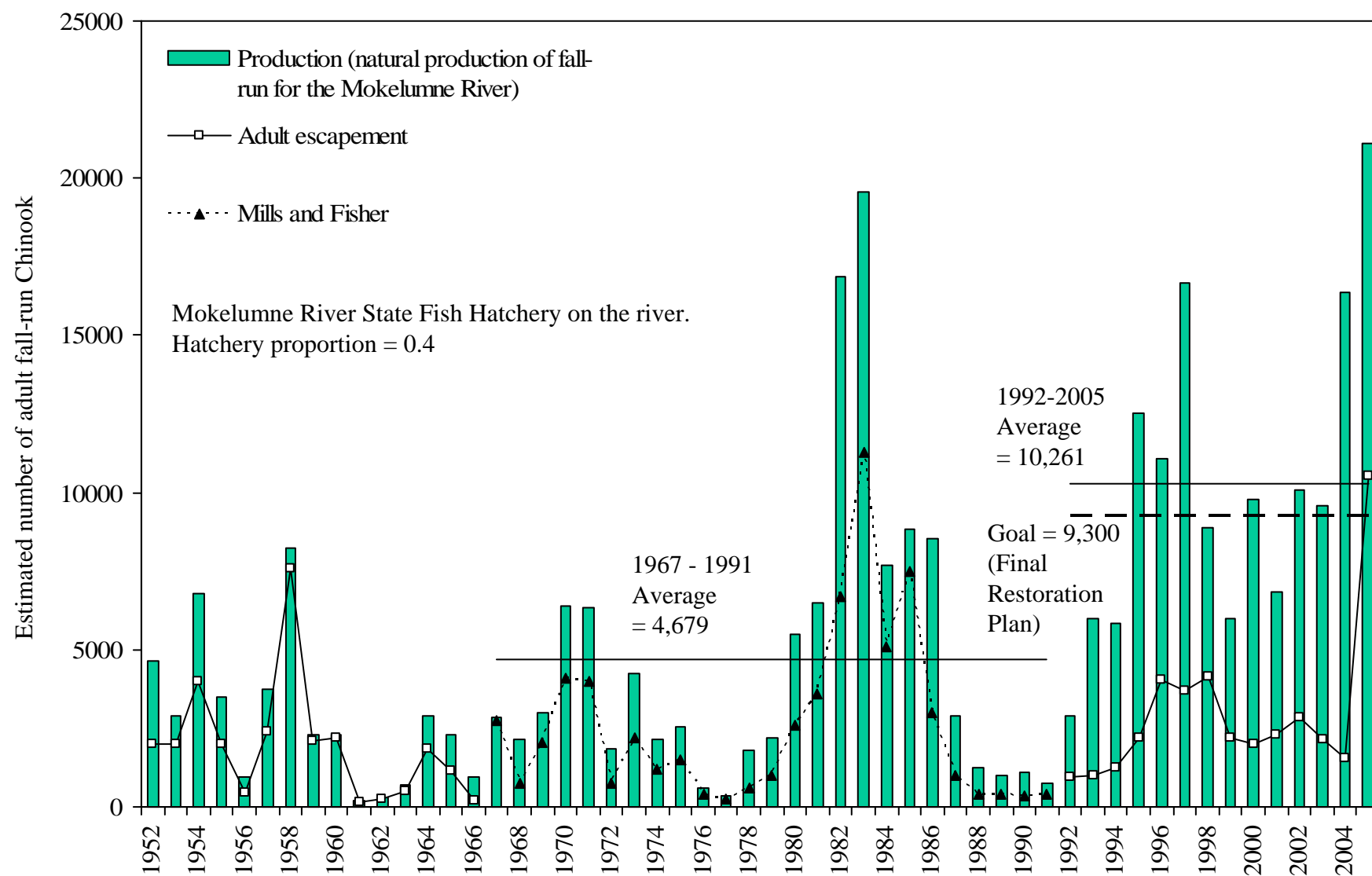
Figure 28. Estimated yearly natural production, and in river escapements of Yuba River adult fall-run Chinook salmon. 1967-1991 baseline numbers are from Mills and Fisher (CDFG, 1994). 1952 - 1966 and 1992-2005 numbers are from CDFG Grand Tab (January 31, 2006). ☐ = data was not available for 1952.

Figure 29. Estimated yearly natural production, and in river escapements of Bear River adult fall-run Chinook salmon. ☐ = data was not available for 1952 - 1983, and 1985 – 2005. Numbers are from CDFG Grand Tab (January 31, 2006).

Figure 30. Estimated yearly natural production, and in river escapements of American River adult fall-run Chinook salmon. 1952 - 1966, and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).
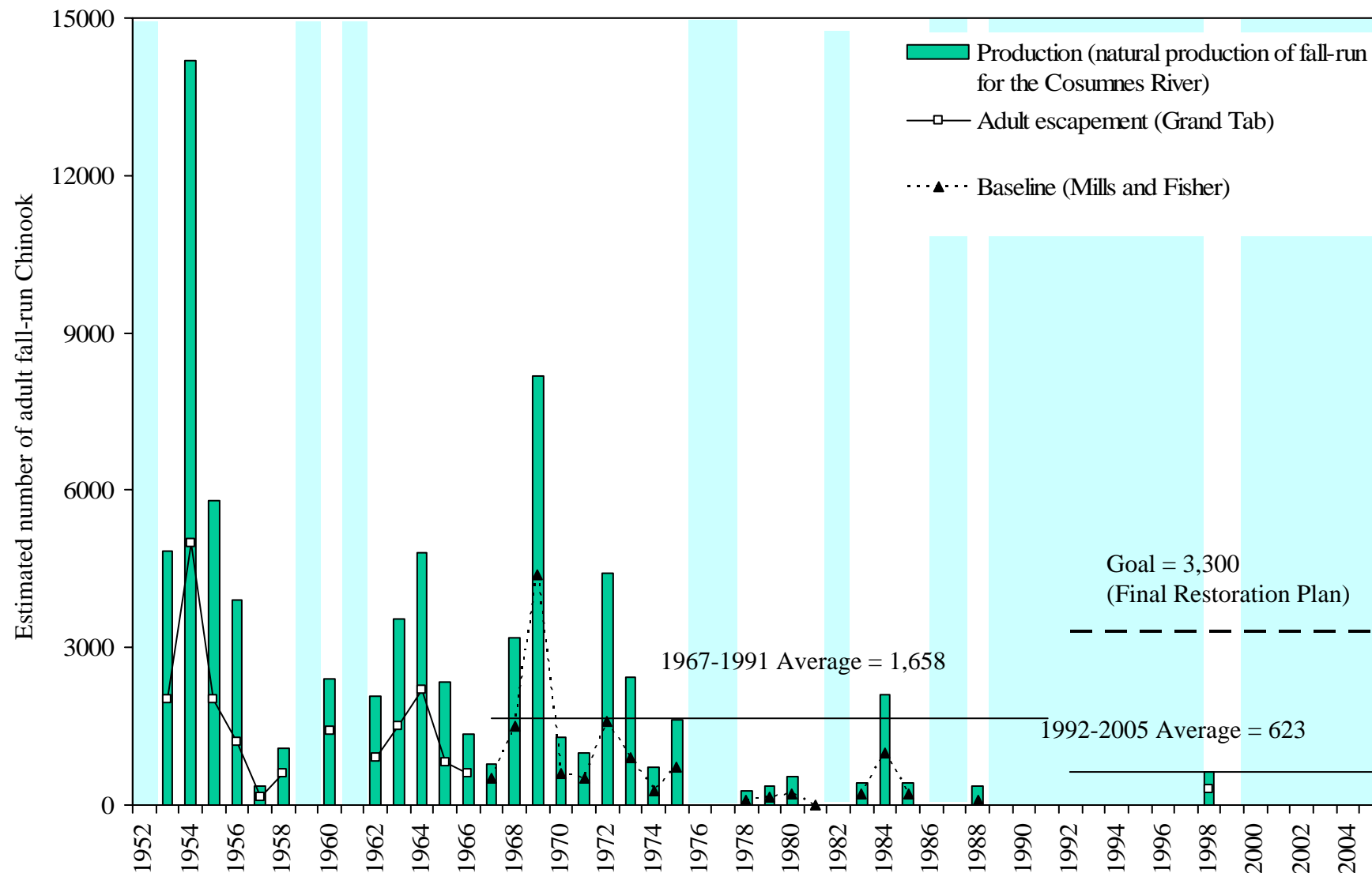
Figure 31. Estimated yearly natural production, and in river escapements of Mokelumne River adult fall-run Chinook salmon. In river escapement numbers were not available for 2001. 1952 – 1966 and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).
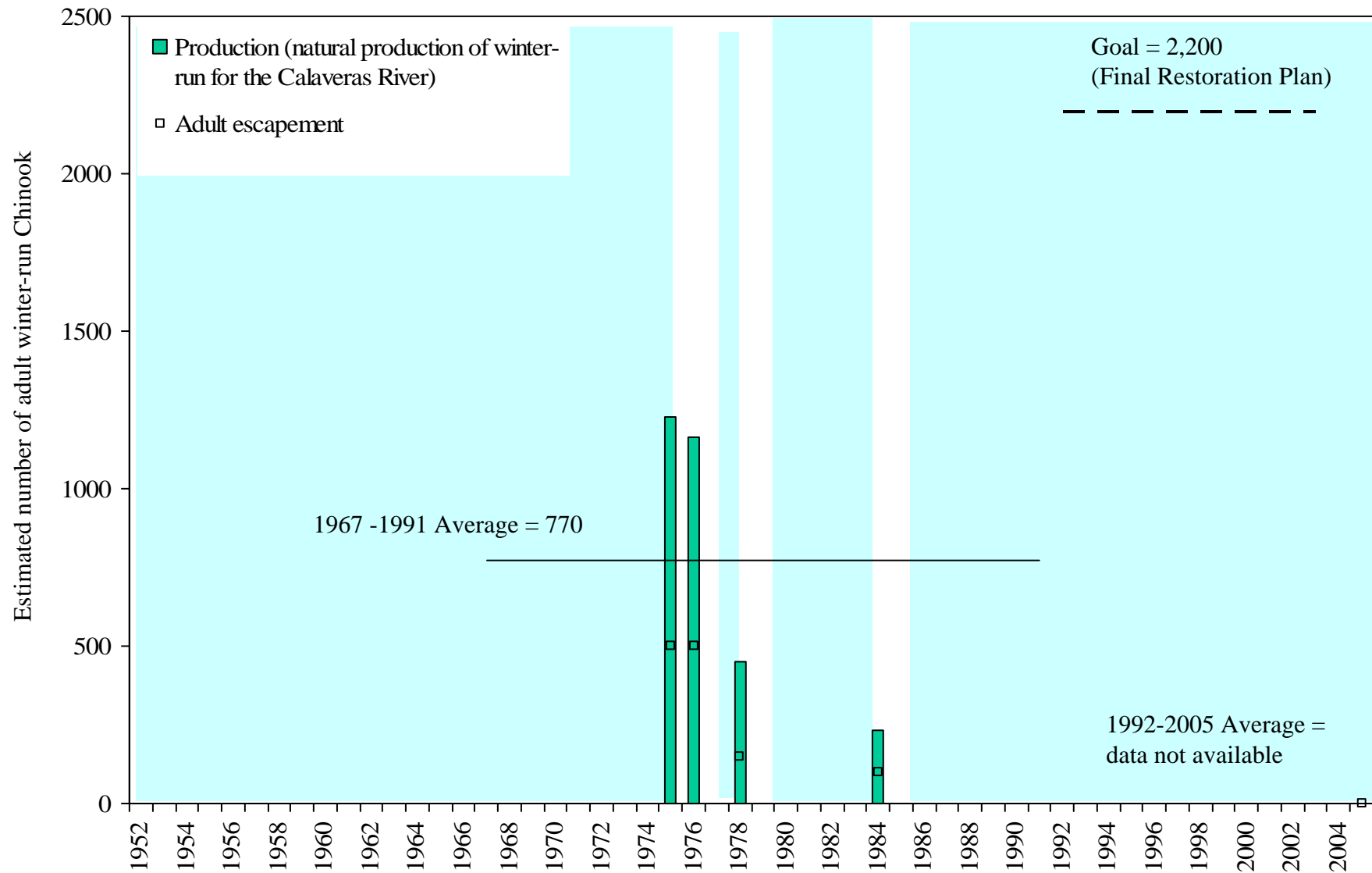
Figure 32. Estimated yearly natural production, and in river escapements of Cosumnes River adult fall-run Chinook salmon.
☐ = data was not available for 1952, 1959, 1961, 1976-1977, 1982, 1986, 1987, 1989 - 1997, and 1999 - 2005.
1952-1966 and 1992-2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991)
are from Mills and Fisher (CDFG, 1994).

Figure 33. Estimated yearly natural production of Calaveras River adult winter-run Chinook salmon. ☐ = data was not available for 1952 - 1974, 1977, 1979 – 1983, and 1985 - 2005. 1952 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers from Mills and Fisher (CDFG, 1994) were not available.
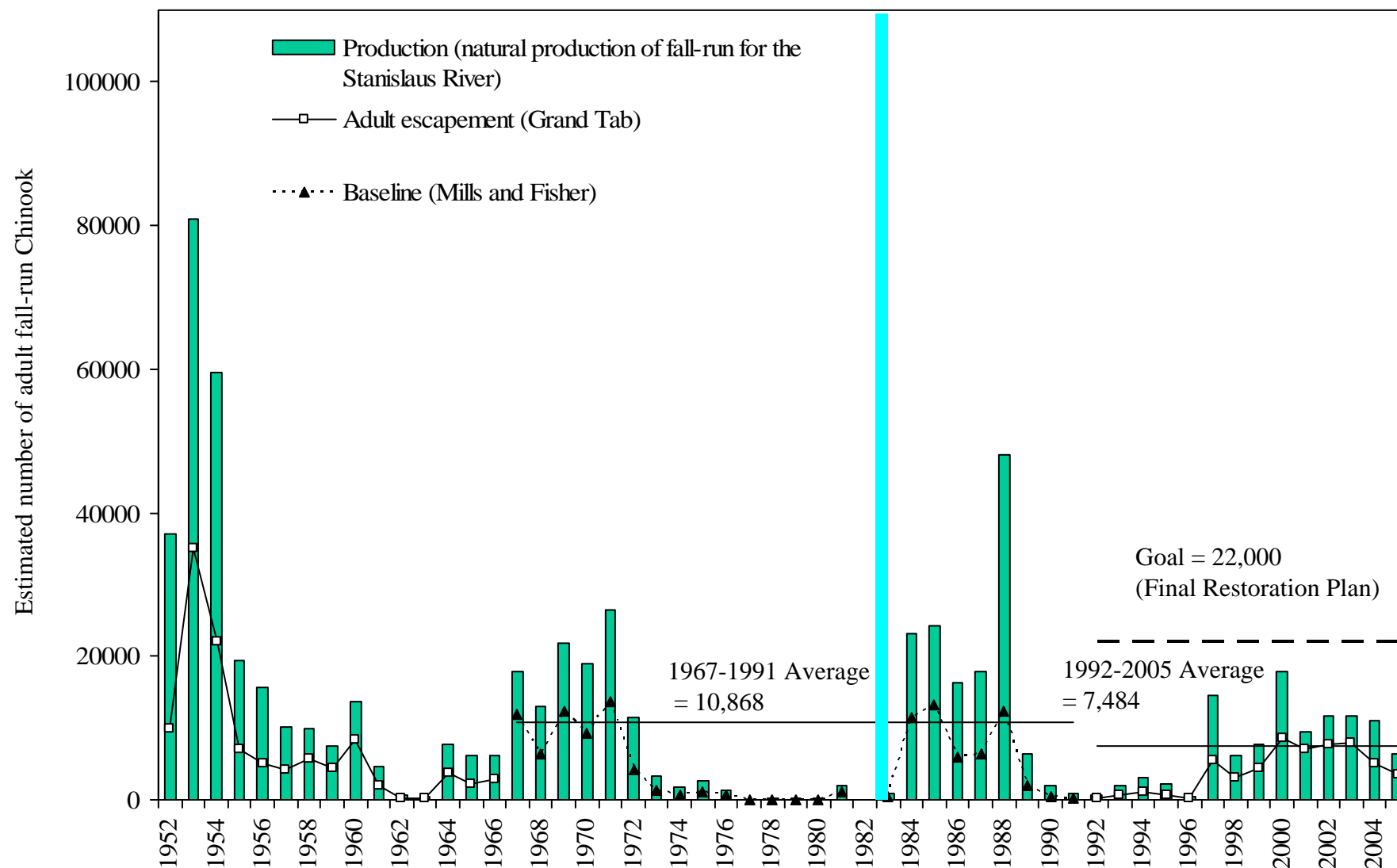
Figure 34. Estimated yearly natural production, and in river escapements of Stanislaus River adult fall-run Chinook salmon. 1952 – 1966, and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994). ☐ = data was not available for 1982.
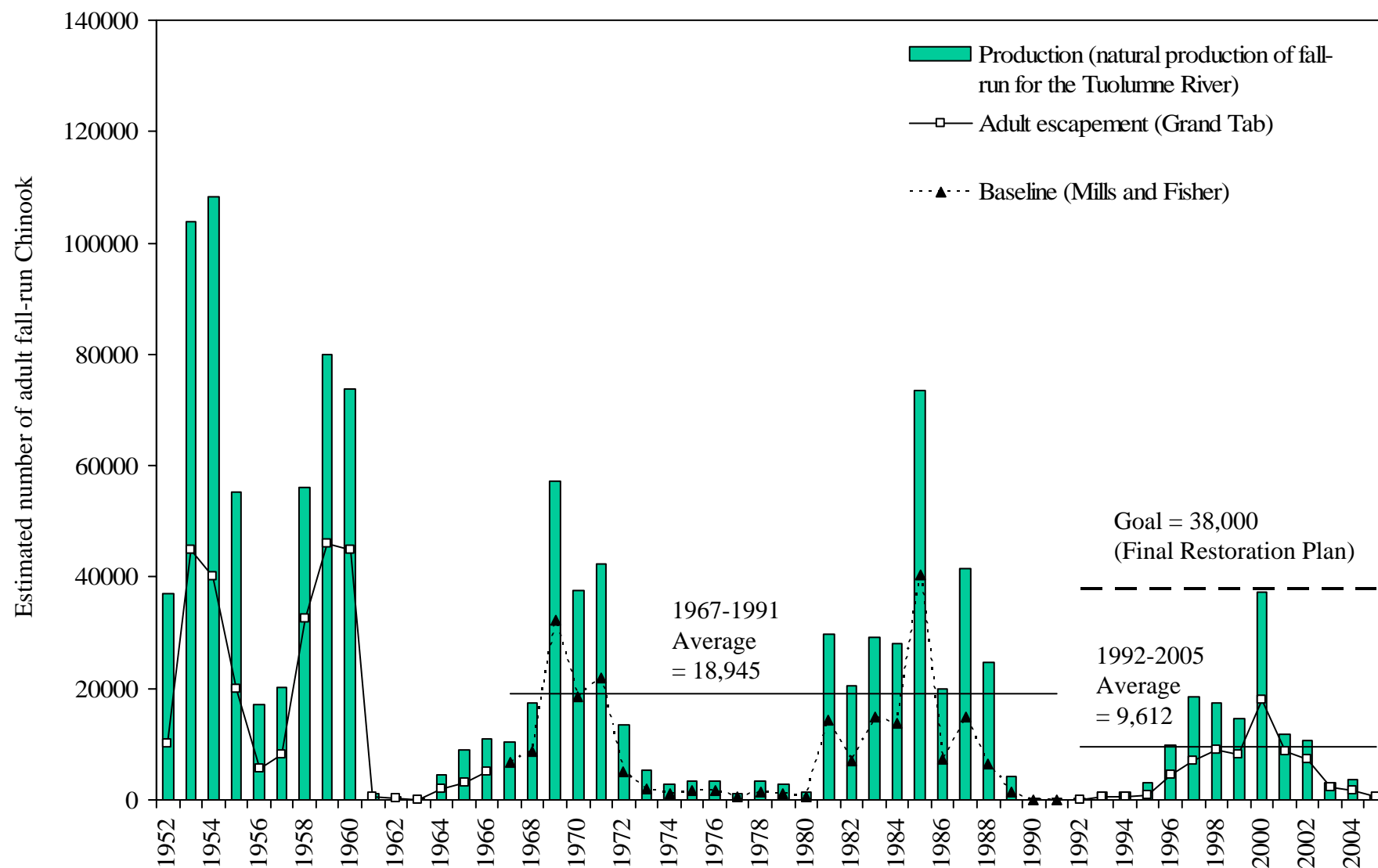
Figure 35. Estimated yearly natural production, and in river escapements of Tuolumne River adult fall-run Chinook salmon. 1952 - 1966, and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).
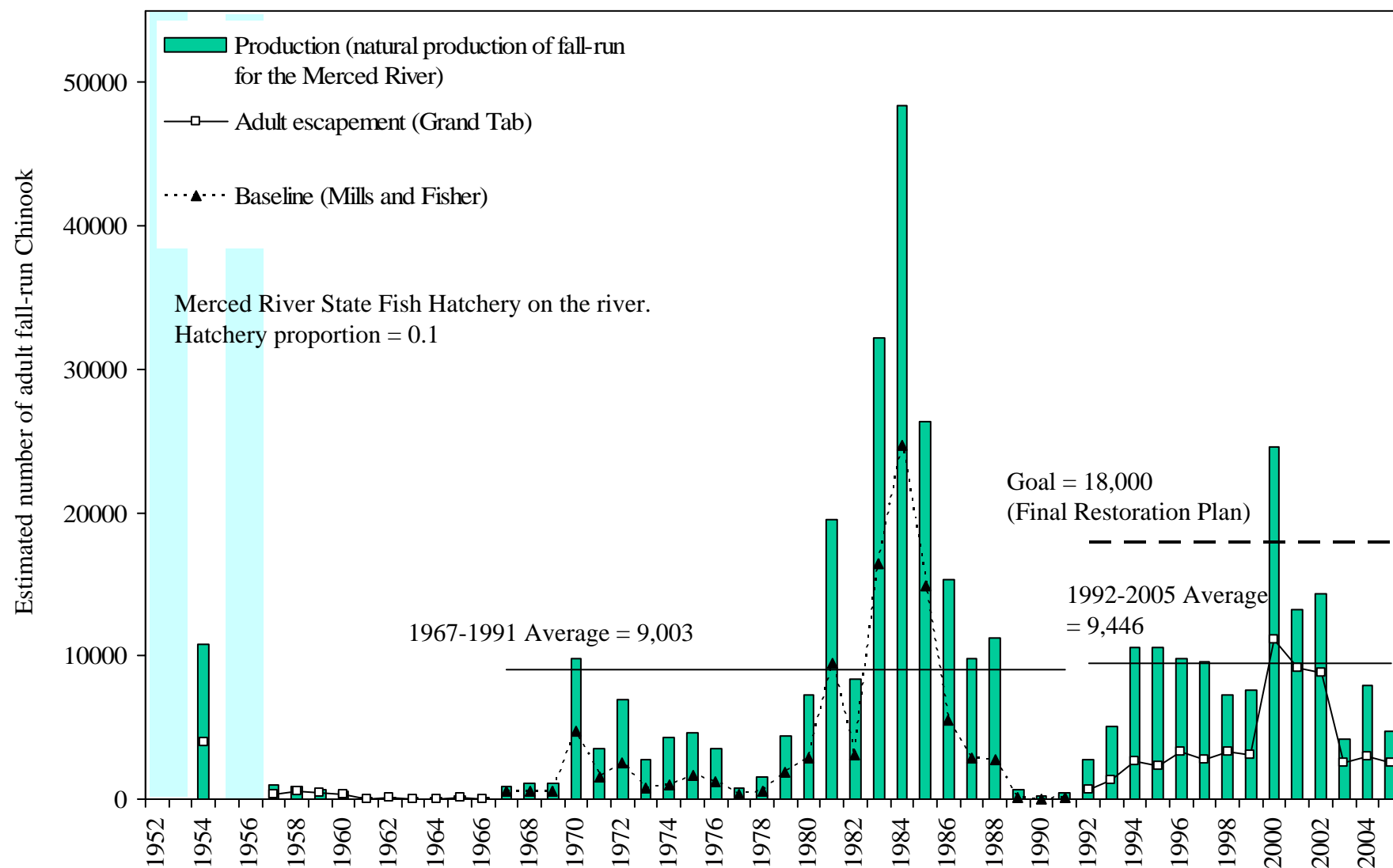
Figure 36. Estimated yearly natural production, and in river escapements of Merced River adult fall-run Chinook salmon. 1952 - 1966, and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006).   ▭ = data was not available for 1952 - 1953, and 1955 - 1956. Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).
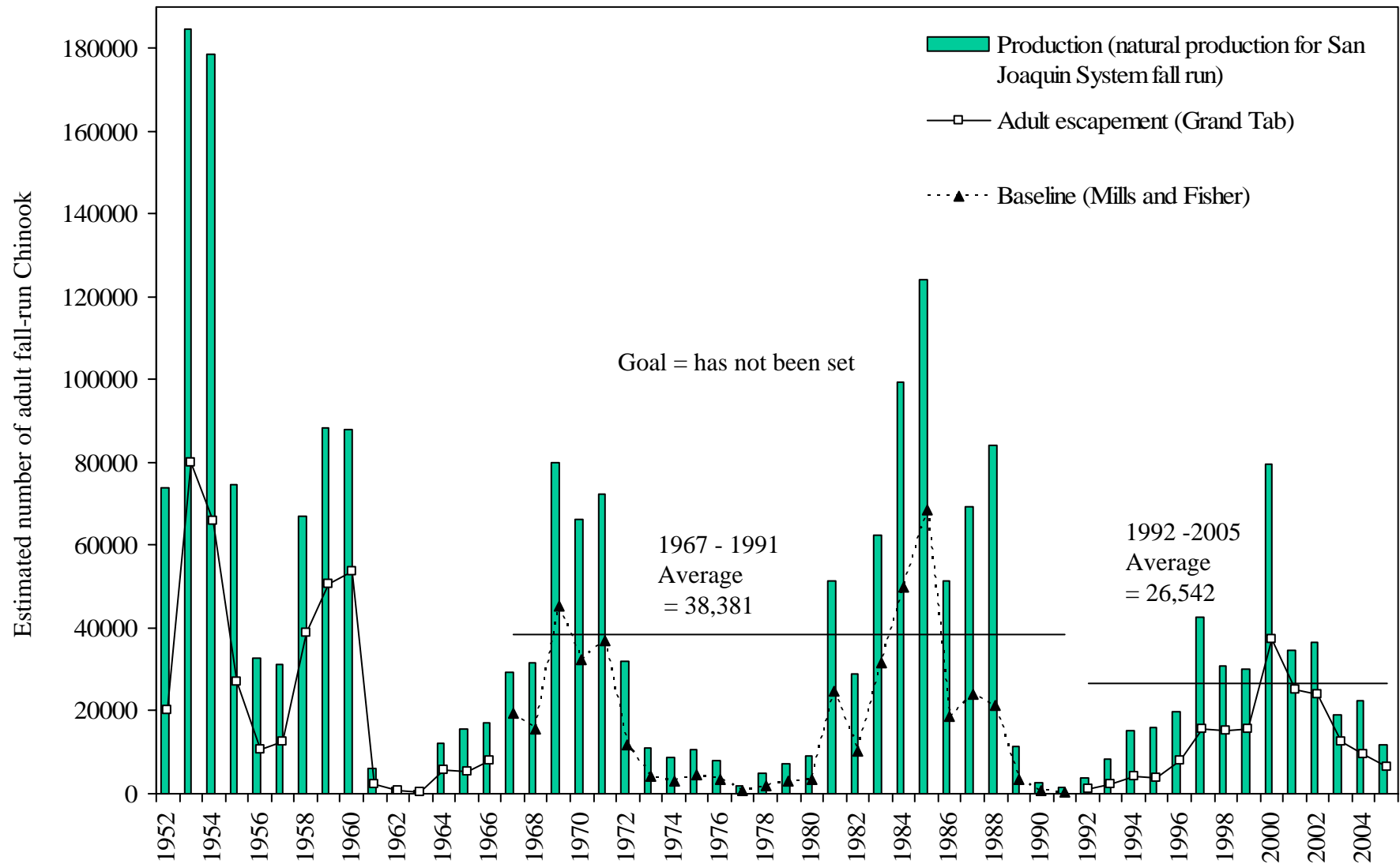
Figure 37. Estimated yearly natural production, and in river escapements of San Joaquin System adult fall-run Chinook salmon. The San Joaquin System is the sum of the Stanislaus, Tuolumne, and Merced Rivers. 1952 - 1966, and 1992 - 2005 numbers are from CDFG Grand Tab (January 31, 2006). Baseline numbers (1967 - 1991) are from Mills and Fisher (CDFG, 1994).
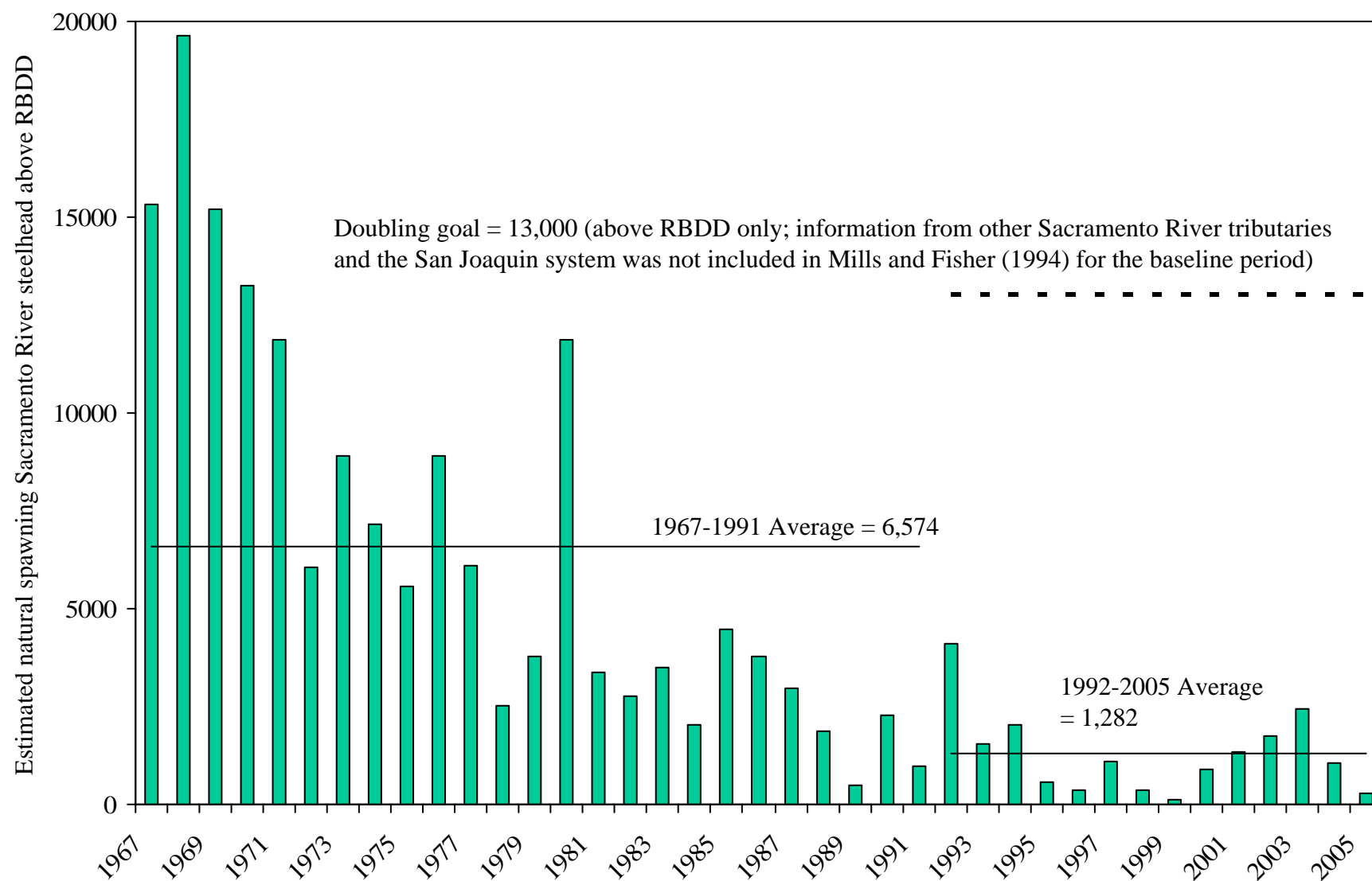
Figure 38. Estimated yearly number of natural spawning of steelhead on the Sacramento River, upstream of the RBDD (Mills and Fisher, 1994). Data for 1992-2005 is from CDFG, Red Bluff.
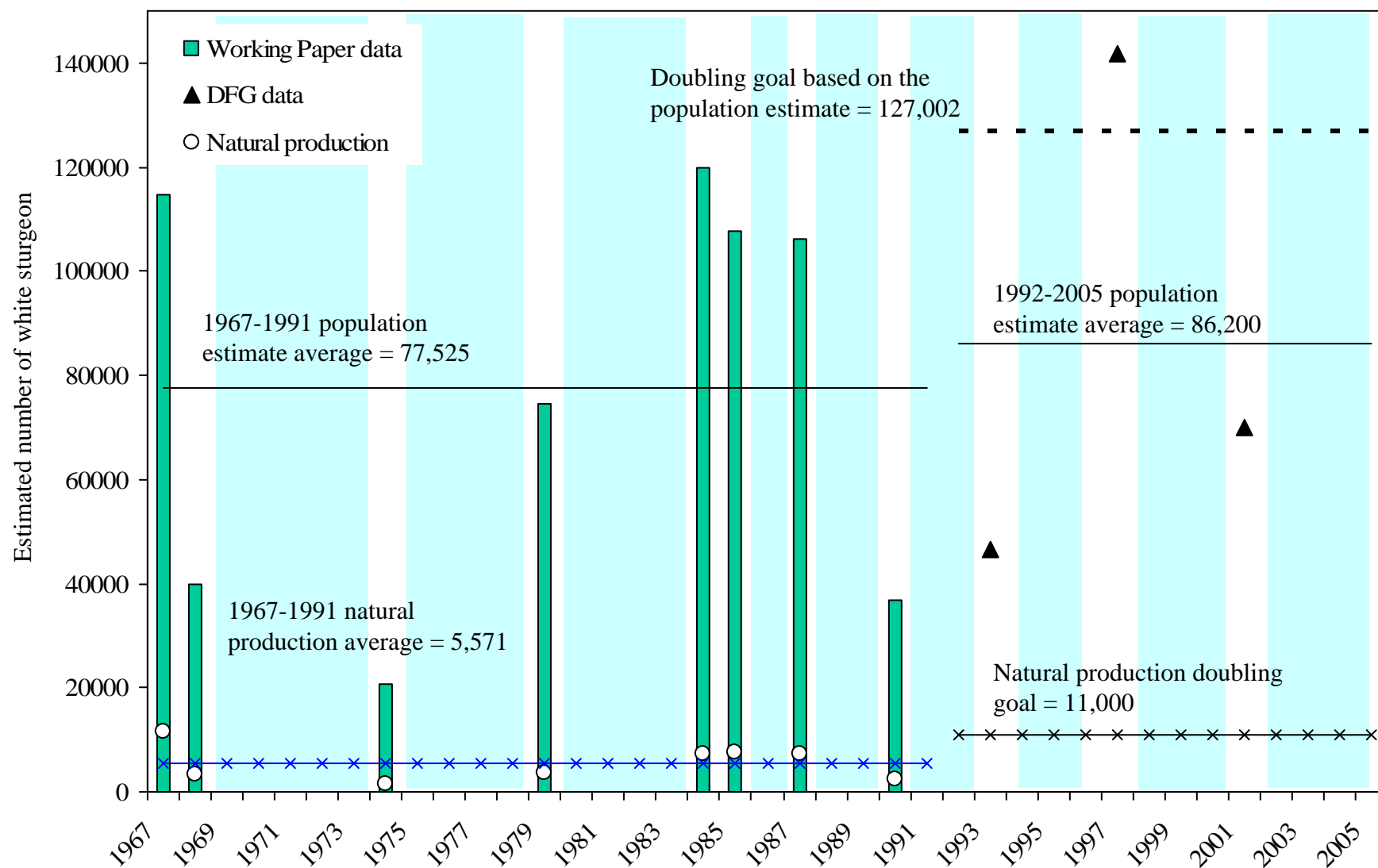
Figure 39. Yearly estimated abundance and natural production estimates of white sturgeon in the Central Valley. Estimates are for >= 40 inch fish. 1967-1991 baseline numbers are from the Working Papers on Restoration Needs, Vol. 3 (1995), and 1992-2001 numbers are from CDFG, Bay Delta. ☐ = data was not available for 1991-1992, 1994-1996, 1998-2000, and 2002-2005.
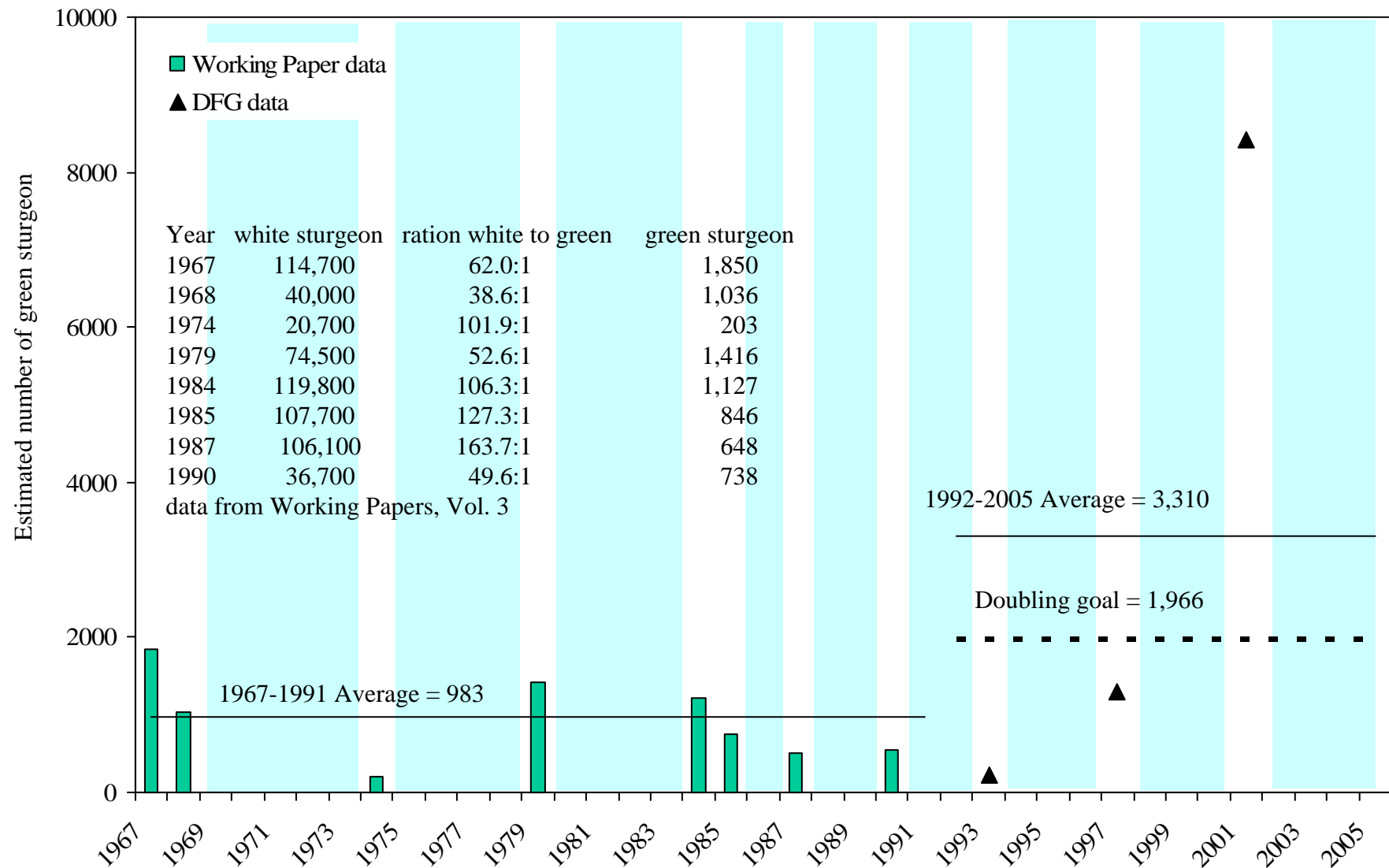
Figure 40. Yearly estimated abundance of green sturgeon in the Central Valley. 1967-1991 baseline numbers are from the Working Paper on Restoration Needs, Vol. 3 (1995), and 1992-2001 numbers are from CDFG, Bay Delta. ☐ = data was not available for 1991-1992, 1994-1996, 1998-2000, and 2002-2005. Green sturgeon estimates were based on a ratio of white to green sturgeon captured during those years when DFG was sampling for these fish.
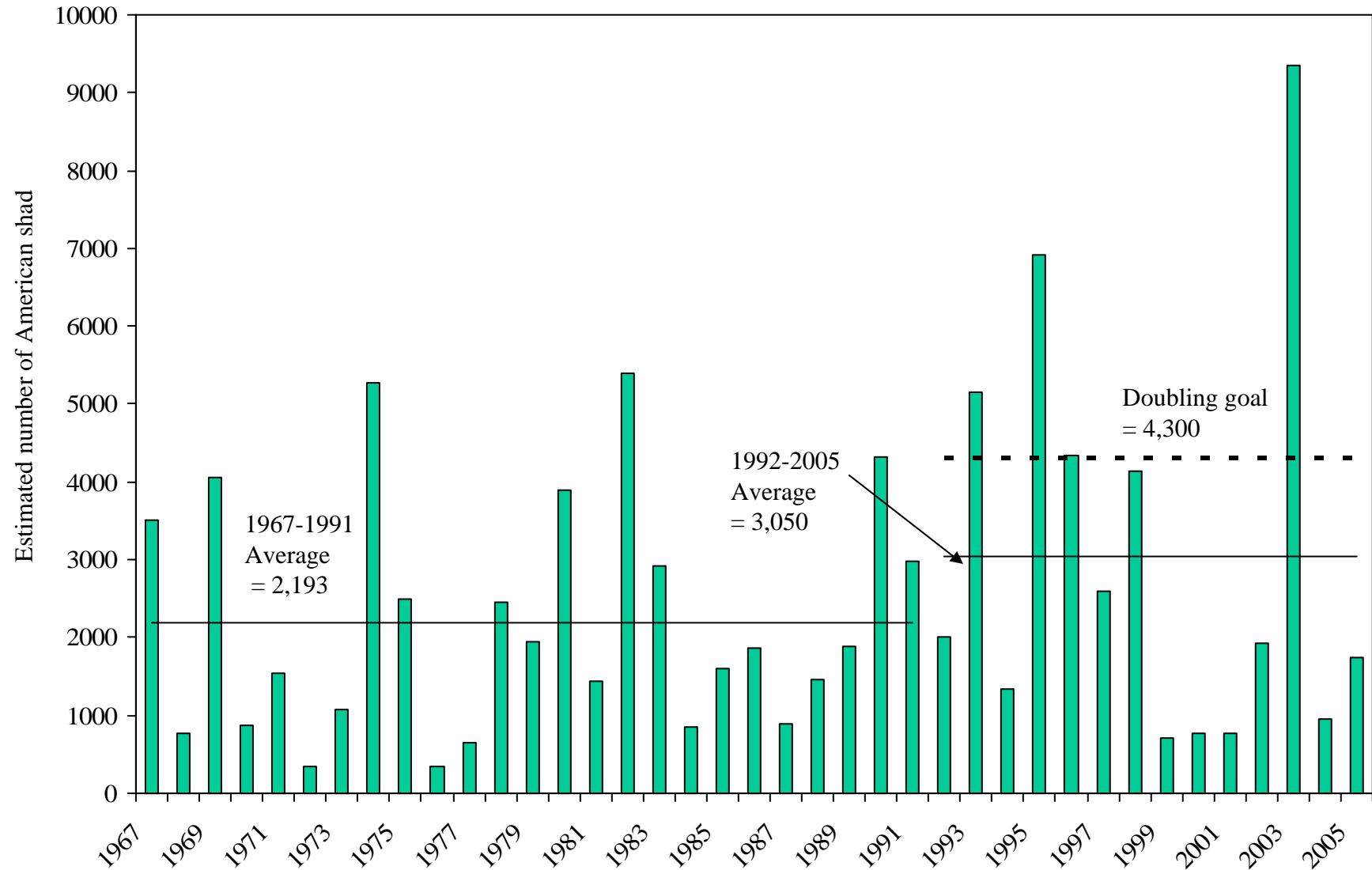
Figure 41. Yearly estimated abundance of American shad in the Central Valley, 1967 through 2005. Data, based on juvenile
abundance from CDFG, Central Valley Bay Delta Branch (CVBDB) fall midwater trawl, was used as an index of production.
1967 – 1988 data is from the Working Papers, Vol.3, and 1989 – 2005 data is the from CDFG, CVBDB midwater trawl website.
The Working Papers site a young-of year index while CVBDB uses an index based on all ages, however the numbers are
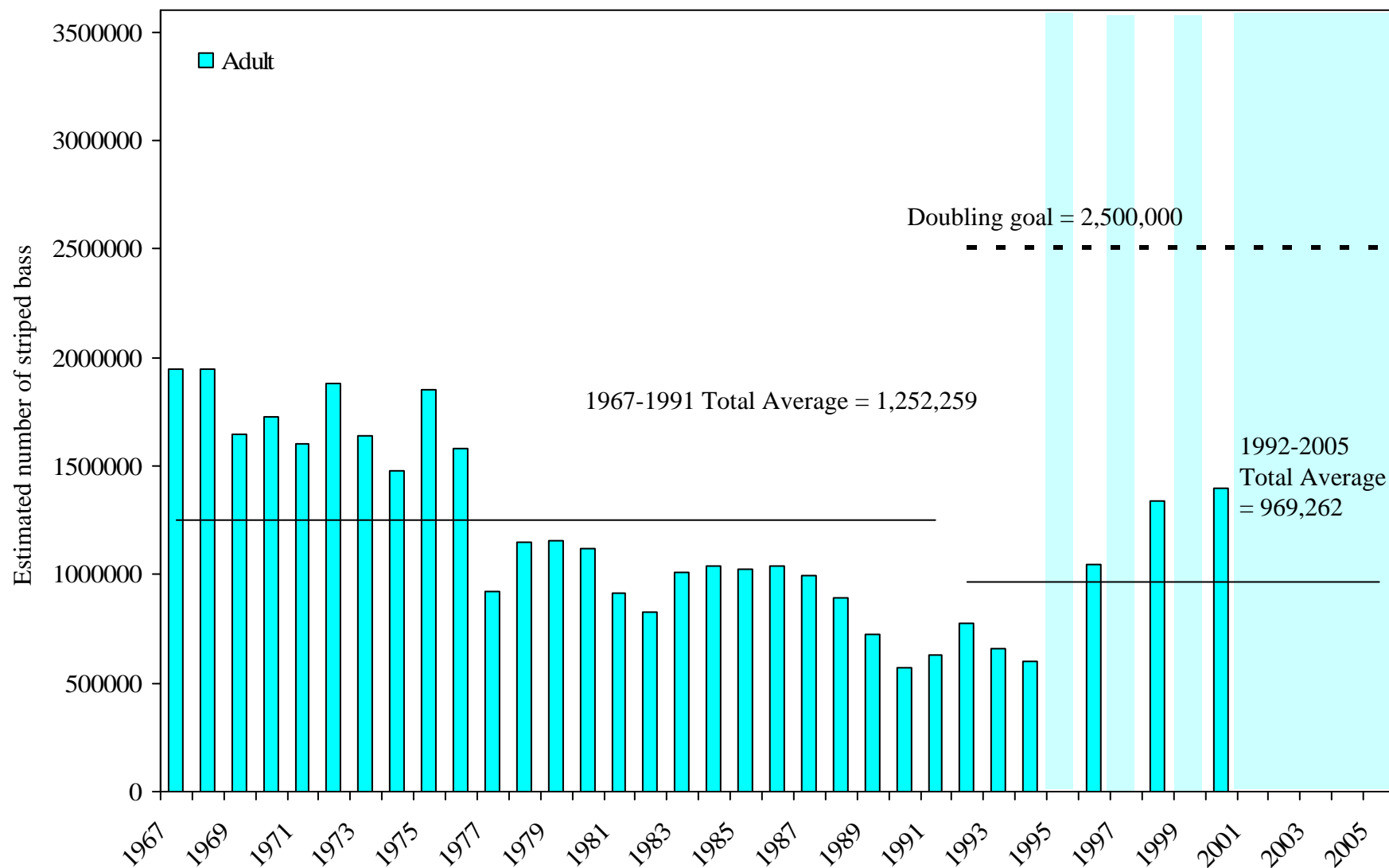nearly identical.

Figure 42. Yearly estimated abundance of adult sized (> 15 inches before 1982, and > 16.5 inches thereafter) striped bass in the Central Valley. Data is from the Mills and Fisher (1967-1991), and CDFG, Bay Delta (1992-2005). ☐ = data was not available for 1995, 1997, 2000, and 2002-2005.